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A SYNOPSIS
OF THE
PRACTICE OF MEDICINE

BY

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INSCRIBED TO MY FATHER,
WILLIAM GRAHAM STEWART, M.D.,
NEWVILLE, PA.,
IN APPRECIATION OF
HIS UNTIRING EFFORTS IN MY MEDICAL TRAINING,

PREFACE.

SEVERAL years of instruction on the subject of the Practice of Medicine have led the author to prepare and present to the profession a brief synopsis of the subject, not with the view of replacing our elaborate text-books, but to give to the busy practitioner and student concise, accurate, and brief descriptions which will suggest outlines and practical thoughts upon etiology, symptomatology, pathology, diagnosis, prognosis, and treatment. All of the prominent authors have been reviewed in text-books and medical journals, and the most approved methods of treatment have been given prominence. Many drugs and systems have not been considered at length, not on account of their inutility, but from the fact that better forms of treatment have taken their place.

The classification of diseases is open to severe criticism, but the author has considered it best, for the present, to adopt the regular arrangement and distinctly state under each subject its own peculiarities. The action of organic extracts and nuclein in pathological conditions has not been considered, as this subject is still under investigation.

In conclusion, let it be remembered that the Practice of Medicine does not consist in the administration of drugs only,

but also in the exercise of good physiological, hygienic, and dietetic measures, combined with a deep mental impression and influence.

The author desires to thank those members of the profession who have given valuable advice and assistance in the preparation of this work.

N. CAROLINA AND PACIFIC AVES.,
ATLANTIC CITY, N. J.
September 1, 1894.

INTRODUCTION.

THE *science of medicine* comprises every method used in the healing art, and includes the practice of surgery, obstetrics, and general medicine. The term *practice of medicine* is very broad in its meaning, but, as used in this work, will be limited to such diseases and conditions as do not come properly under the field of surgery, obstetrics, or specialism. No one has any moral or legal right to treat disease, nor can he properly understand or grasp the subject, until he is well versed in anatomy, physiology, histology, general pathology, and therapeutics.

Any departure from the normal physiological condition is termed *disease*, and is either functional or organic. It is *functional* when the structure of the organ affected has not undergone pathological changes which are of a permanent character. It is *organic* when the organ has undergone permanent pathological changes. Every disease is dependent upon some distinct cause, and the removal of it will ameliorate untoward symptoms or produce a cure.

Diseases are *contagious* when their causes are reproduced within the body and communicated by direct or indirect contact; *infectious* when reproduced out of the body and communicated through air, water, or food, but not reproduced in

the body; *endemic* when a certain number of cases occur periodically or constantly in the same limited territory; *epidemic* when they spread promiscuously from one place to another, but not limited; *sporadic* when a single case occurs without distinct history of exposure, or independent of other conditions, and not spreading. When the onset is sudden the disease is *acute*; when the symptoms are mild and ill-defined it is *subacute*; and when its duration is prolonged indefinitely it is *chronic*.

Synonyms.—Every disease or condition is known by two or more distinct names, and it is wise for the practitioner to familiarize himself with the leading terms of each as given.

Definition.—When asked for a definition or brief description of a disease, the essential or pathognomonic symptoms are all that is required. The definitions here given, although brief, will designate the condition readily.

Etiology.—A study of the cause of disease. Certain persons are more subject to disease than others, and are said to have a *predisposition* to it which has existed from birth (*hereditary*) or has been *acquired*. The children of phthisical, nervous, insane, rheumatic, and gouty parents have a *diathesis*, *predisposition*, or tendency to the development of the same disease. Age, sex, modes of living, duties, habits, and race all influence disease. The exciting or direct causes are specific germs, exposure, improper food and drink, dissipation, intemperance, excitement, worry, passion, and allied conditions. A *period of incubation* is the time that elapses between the exposure to a contagious or infectious disease and its acute onset.

Symptoms.—Those conditions which arise during the course of a disease and serve to demonstrate its presence, progress, and decline. Those symptoms which are recognizable by the patient only are *subjective*, and those recognized by the physician are *objective*. It frequently happens that the patient will not be entirely at ease for an indefinite time before the onset of the disease, but will present certain signs which are called *prodromal*. *Pathognomonic symptoms* are those which serve to distinguish a disease from others. Symptoms may subside suddenly (*crisis*), gradually (*lysis*), or suddenly leave one organ and appear in another (*metastasis*). Disease may terminate in *death*, which is recognized by a cessation of vital function. *Complications* are transitory or permanent symptoms which intervene in the natural course of a disease, and are usually unfavorable.

Pathology.—This term, as used here, embraces a study of all morbid processes, their development, course, and morbid anatomy. It is considered from the general and special standpoint without long detail.

Diagnosis.—The art of distinguishing one disease from another. When made directly from the symptoms and history it is called a *direct diagnosis*. If made from the history and a detailed account of another it is an *indirect diagnosis*. A close differentiation between two intimately related or similar diseases is termed a *differential diagnosis*. *Diagnosis by exclusion* is made by proving what the case cannot be, until only one condition is left, which is the real disease. A good diagnostician must be a thorough anatomist and physiologist, and be familiar with the minutiae of physical signs.

Prognosis.—The act of foretelling the course or termination of a disease. Unless you are positively certain of what you speak, it is best to give a guarded prognosis, for the ways of nature are very peculiar, and untoward symptoms often arise in the most favorable cases.

Treatment.—This subject has been considered from every possible side, and it is your duty to study well hygienic, dietetic, and physiological methods before you rush to drugs. Many pathological symptoms will subside under proper care and a minimum of medicine, but always stand ready to use such remedies as the occasion demands. Let *elimination* (carrying off excrementitious products through active emunctories) form the foundation of all treatment.

Treatment is *preventive* or *prophylactic* when it is directed to a prevention of the spread or communication of disease to others, and is accomplished by isolation, disinfection, and keeping the bodily functions active and in physiological condition.

Abortive treatment comprises the methods used to check the course of or abruptly terminate a disease. When treated symptomatically from day to day it is called *expectant*.

Palliative treatment is the application of remedies for temporary relief in chronic diseases or pending a radical cure.

Allopathic treatment is a form in which drugs are used upon the principle that unlike cures; that is, a drug must be given which produces a condition contrary to the disease. Very few physicians hold to this theory, and the word "allopathic" as applied to the regular system is incorrect and narrow.

Homœopathic treatment, a system founded by Hahnemann,

with the motto, *Similia similibus curantur*, administers drugs which produce symptoms like the morbid condition if administered in health.

Regular treatment is founded upon the broad base of clinical experience, and binds itself to no motto, theory, ism, pathy, or sect. This work is written from this broad view, and no method, be it introduced by any sect, is given upon a sectarian basis, but with a full knowledge that it will give certain results at the bedside independent of theoretical considerations. It is our duty to theorize in the office, society, or laboratory; but the sick-room demands clinical experience and knowledge. This should not discourage experimental research, for when conducted properly many new methods may be evolved.

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A SYNOPSIS

OF

THE PRACTICE OF MEDICINE.

FEVERS.

Fever, or *pyrexia*, is a symptom of some general or local pathological process, recognized by an elevation of the normal body temperature, quickened circulation, increased catabolism, and disordered secretions, together with a disturbance of the physiological functions of the part or parts affected.

Temperature.—The average temperature of the human body in health is 98.6° F. or 37° C. This temperature is not constant in the same individual, but varies a fraction of one degree according to the hour of the day, the amount of exercise or excitement, and the character of diet. Temperature receives various terms, according to its height:

Subnormal temperature varies from	96°	to	97.5° F.
Subfebrile	"	"	99.5° " 100.4° F.
Slight fever	"	"	100.5° " 103° F.
High	"	"	103° " 105° F.
Hyperpyrexia includes all temperatures above 105° F.			

Temperature is taken with a self-registering mercurial thermometer, by placing it in the axilla or groin in close contact with the skin; more commonly by placing the bulb under the

tongue, and closing the lips upon it, or by inserting the bulb into the rectum for several inches (*rectal temperature*). The last method is most reliable, but objectionable in many cases. To insure accuracy, allow the thermometer to remain five minutes before removing it.

During fever the heart's action is accelerated, but soon becomes depressed and weak; respiration is increased; there are nervous symptoms, such as headache, drowsiness, languor, insomnia, delirium, coma, subsultus, and general nervousness; gastro-intestinal disturbances; derangement of the functions of the skin, which may be hot, dry or moist; profuse perspiration, eruptions, flushing of the face; urine is usually high-colored, scanty, or profuse. Fever causes a change in the physiological action of every organ in the body. It is usually preceded by malaise, chilly sensations, a chill, rigor, or convulsions, in children, lasting from a few minutes to several hours. If temperature is taken during a chill or rigor it will show pyrexia, and not subnormal temperature as would be expected.

The *acme* of a fever is the highest point or critical stage.

The *fastigium* represents that period during which the fever pursues a typical course, at its height, for a long or short period.

Defervescence is the period of fall or decline, and occurs by:

(a) *Crisis*—a sudden fall of temperature to normal or subnormal within twenty-four hours.

(b) *Lysis*—a slow fall of temperature to normal in three or more days.

Convalescence is a slow or rapid return of strength after defervescence.

A *simple continued fever* is one in which the temperature continues above normal for an indefinite period, with variations of not more than one and one half degrees from day to day.

Intermittent fever has a fall of temperature to normal for a short period, then rises, and thus intermits indefinitely.

Remittent fever is paroxysmal, with distinct remissions of several degrees, but never intermittent.

Idiopathic or specific fever is one which is not dependent upon a local affection, but upon some pathogenic microörganism whose action is not definitely known.

Symptomatic fever is dependent upon some local trouble, and is caused by the absorption of ptomaines.

Neurotic fevers are caused by a lack of inhibition in the nervous system, nerve-lesions, and hysteria.

Eruptive fevers are self-limited, self-protective, contagious, and accompanied by a rash of a specific character, always appearing at a definite time during the course of the disease.

Infectious fevers are dependent upon a specific germ that flourishes without the body; hence not communicable from one person to another by direct contact. Malaria; influenza.

Contagious fevers are caused by a specific germ which reproduces itself within the body and is capable of infecting others by direct contact, or indirectly by contact with the germs carried on clothing, books, etc. Variola; scarlet fever.

Epidemic fevers spread over a whole section of country, run for a long or short period, disappear, and may appear in some other neighboring community. Not stationary for any prolonged period.

Endemic fevers exist in certain communities at all times, limited in extent, and liable to become epidemic; in fact, they are sometimes termed native fevers.

Sporadic fevers are those isolated cases that arise independent of epidemic or endemic causes, and are always traceable to some preëxisting case, as they never arise spontaneously.

THE SPREAD OF CONTAGIOUS FEVERS.

Every contagious and infectious disease, according to modern pathologists, is caused by a specific microörganism or germ which enters the body through the respiratory, gastrointestinal, or genital tract, or some abrasion of the skin. The germ grows and reproduces itself at the expense of the white cells and albuminoids either in the blood or some localized part of the body, and produces a poison or waste product peculiar to itself, called a *ptomaine*. Some time, varying from a few days to several weeks, must elapse before the actual onset of the disease, during which the germs are coming into activity, constituting the *period of incubation or invasion*. These living germs constitute the actual means of contagion, and always originate from that special disease. Contagion is most active during the height and decline of a disease, as at that time the excreta, urine, expectorated matter, exhalations, desquamating epithelium, or discharges from vesicles, pustules, or open sores contain the germ in its most active state. Thus it is possible to convey the germ, by direct contact with the sick, on clothing, articles of furniture, books, and other things that have been used by or about them. It must be remembered that the germ of scarlatina, variola, and some other diseases will lie dormant in clothing for many years, and still retain its full power of infection. All persons are susceptible to contagious diseases, but more especially children and those debilitated by sickness, confinement, and bad hygiene. One attack usually affords immunity from a second; hence self-protective to a degree. Second and third attacks may occur in the same person.

PROPHYLAXIS OF CONTAGIOUS DISEASES.

There are certain definite rules applicable to the prevention of all contagious and infectious diseases, which will be summarized in this section.

Isolation.—The first imperative measure. If possible, select a large, well-ventilated room at the top of the house—southern or western exposure preferable. Remove all unnecessary and upholstered furniture, curtains, clothing, rugs, pictures, and heavy carpets. Put the patient in this room and allow no one to enter except the nurses and physicians—always instructing them to avoid contact with other members of the family, and to stay in that part of the house, unless clothing has been previously changed and an antiseptic bath taken.

Disinfection.—All excreta, vomited and expectorated matter must be thoroughly and freely mixed with chloride of lime, Platt's chlorides, or concentrated carbolic acid, and either buried or thrown into the sink *after standing for one hour*. As far as practicable use cotton and old linen for the discharges, and burn at once. Soiled clothing and handkerchiefs should be placed in an antiseptic solution before removal from the room, and then boiled for six hours before they are used again. It is a wise precaution to wipe the floor and furniture daily with an antiseptic wash. A sheet, wetted with an antiseptic solution, is often hung over the door as an additional safeguard. Unused food should always be destroyed. Keep the windows open to afford free ventilation, taking care to avoid direct draughts. Bathe the patient frequently with antiseptic washes (acid bichloride of mercury, $\frac{1}{3600}$). During convalescence, a daily scrub-bath should be given, and, as a final means, before going into other parts of the house, thor-

oughly shampoo the hair with antiseptic washes and change all clothing.

Disinfect the room by scrubbing the floors, washboards, furniture, and walls with acid bichloride of mercury; scraping, calcimining, white-washing, or papering the walls and ceiling; thoroughly boiling all bed-clothing and linen for six hours; and destroying, by fire, books and toys used by the patient. The fumes of burning sulphur are frequently used, but it must be remembered that *sulphur vapor is antiseptic only in the presence of moisture*; hence it is well to have the room filled with steam when this method is used.

ANTIPYRETIC MEASURES.

Fever is diminished by hygienic and dietary means, internal medication, and the local application of cold.

Hygiene and Diet.—All persons with slight or high fever should be placed in bed in a cool, well-ventilated room, and be freed from all business and family cares and worries. Light, nutritious diet (milk, broths, and refrigerant drinks) at regular intervals. This is the physiological method, and favors Nature in her cure, but does not in itself lessen fever.

Internal Medication.—Aconite, veratrum, antimony, digitalis, colchicum, gelsemium, and strophanthus act upon the circulatory system. Quinine, cinchona salts, salicylates, carbolic acid, camphor, and phenacetin reduce fever by lessening active catabolism. Acetanilide, nitrous ether, alcohol, and antipyrin act by dilating the capillary vessels of the skin, thus increasing radiation of heat.

Local Application of Cold—*Sponging.*—In cases of moderate or high fever the body is sponged all over with cold or tepid water, prolonging the operation as long as it is comfort-

able to the patient, exercising care not to chill. This is a convenient and efficient means, in mild cases, to reduce temperature one or two degrees.

Wet-pack.—This consists of wringing sheets out of ice-cold water and wrapping them around the whole body, and repeating the process every minute or more until the condition of hyperpyrexia is overcome. Some wrap patient in a wet sheet and pour cold water over it.

Ice-bags or cracked ice are often applied to one or more parts of the body, and allowed to remain until the desired local results are obtained.

Cold Baths.—The Germans use this method very extensively in treating typhoid fever. The water is prepared in a bath at a temperature of 60° to 80° F.; the patient is gently immersed in it for five, ten, or twenty minutes, according to indications. Sometimes iced water is gradually added to water at 80° F., until it falls to 60° or 70° F. When patient is removed he should be rubbed gently with a soft, coarse towel, covered warmly, and, if weakened, stimulants must be given. A cold bath is used whenever the temperature reaches 102° F., and reduces temperature three to five degrees. Patients threatened with pneumonia, hemorrhage, or collapse should not be placed in a cold bath. Repeat baths as often as necessary.

CONTINUED FEVERS.

EPHEMERAL FEVER.

Synonyms.—Simple continued fever; febricula; simple essential fever; irritative fever; synochus.

Description.—Children and adults are subject to the influences of mental and physical exhaustion, over eating and drinking, excitement, exposure to heat and cold, and often de-

velop a slight fever with no definite or constant pathological lesion. It begins with a slight chilly sensation, chill, rigor, or convulsion, together with general malaise, slight headache, anorexia, thirst, and coated tongue. Temperature gradually or quickly runs from 101° to 104° F.; pulse rapid; urine scanty and high-colored; slight delirium if the temperature is high. These symptoms continue from one to ten days, and subside by lysis or crisis.

Treatment.—Rest in bed; a light diet of milk, meat broths, rice-milk, sago, and acidulated drinks. Sponge the body frequently with tepid or cold water and alcohol. Triturated calomel, one-tenth grain, every hour, until free action is obtained. In addition, you may give a mild fever mixture.

R

Tr. aconiti radicis ℥. xvj.

Liq. ammonii acetatis..... f ʒ jss.

Syrupi aurantii floratis...q. s. ad. f ʒ ij.

M. Signa. One teaspoonful every two hours, as necessary.

Remove every possible cause, and, during convalescence, administer tonics of iron and quinine if indicated.

INFLUENZA.

Synonyms.—Epidemic catarrh; *la grippe*; “the grippe”; Russian influenza.

History and Etiology.—Influenza is a disease that has been known to man from most ancient times, occurring among all nations at irregular intervals. No definite records of these epidemics exist previous to the sixteenth century. Fagge records eleven epidemics in the sixteenth century, sixteen in the seventeenth, eighteen in the eighteenth, and ten between the years 1800 and 1850. A very severe epidemic spread over Europe, America, and Asia during the winter of 1889 and the

spring of 1890, causing a great mortality, and leaving thousands of people with its sequelæ. In 1891 and 1892 the disease was mildly epidemic in parts of the United States, China, and Japan. It seems to affect cattle as well as man, and the great epidemic of epizootic in horses, in the year 1872, in New York, is claimed to have been due to this poison or a similar one. Each epidemic seems to differ from the preceding one in course, sequelæ, and mortality.

There is a prevalent idea that influenza is always a forerunner of Asiatic cholera, from the fact that the latter has frequently followed the track of influenza. In July, 1892, cholera was epidemic in Russia, and followed the track of the recent epidemic of influenza and made its appearance in Paris. These are given only as facts, but no reliable deductions can be drawn from present statistics.

Influenza is undoubtedly caused by an aërobic germ which is transmitted by the air. It is *infectious* and, possibly, slightly contagious. Some pathologists claim that they have found the germ of influenza, and that it is the smallest known, and flourishes in the mucous membrane of the respiratory tract; but it remains to be confirmed. All persons, strong and weak, are attacked, but more especially those suffering with chronic diseases. Heat and cold do not appear to influence the spread of influenza, for it exists in the coldest parts of Russia and in the warmest tropical climates.

Symptoms.—*Onset* is sudden with a distinct chill, an attack of syncope, or may be preceded by slight headache, giddiness, anorexia, and general malaise. Temperature rises rapidly in a few hours from 102° to 104° F.; intense aching pain in the head, back, arms, and legs; skin may be dry and hot, or covered with profuse perspiration; mild delirium in cases with high temperature; great lassitude; photophobia; conjunctivæ are congested and lachrymation is profuse; free, clear, watery

discharge from the nose; occasional epistaxis; sneezing and a dry, hacking, irritating cough; hoarseness; tongue is coated with a heavy white fur; pulse increased, with a tendency to weakness; skin is often hyperæsthetic. Stomach is irritable; nausea or vomiting; epigastric tenderness or pain; may be slight hæmatemesis; bowels constipated or in state of diarrhœa.

These symptoms continue four or five days, and subside by lysis or crisis, leaving the patient in a condition of *extreme prostration and debility, out of all proportion to the duration of the disease*. *Convalescence* is slow, and lasts from one week to one year. In many cases, just as in typhoid fever, the normal strength or power of endurance is permanently impaired. Pneumonia is the most frequent complication, either lobular or lobar. The joints often become inflamed in certain epidemics (1889-90).

Peculiar Manifestations.—The onset is usually the same, but certain symptoms are more marked in some than in others. It assumes a *catarrhal form* when the respiratory tract is affected; a *gastro-intestinal form* when that tract is most involved; a *nervous form* when the manifestations are principally nervous, with slight involvement of gastro-intestinal and respiratory tract. Any of these forms may exist alone or in combination.

Diagnosis.—Made from its being epidemic: sudden onset; peculiar catarrhal, gastric, and nervous symptoms; extreme prostration; sequelæ, and slow convalescence.

Prognosis.—In previously healthy persons influenza, if properly guarded, is not fatal. Complicated cases are uncertain. Among old and debilitated persons, chronic cases of Bright's disease, tuberculosis, cancer, heart-diseases, and in very young children the mortality is high—often fifty to seventy-five percent. An epidemic of influenza always leaves its after-

effects so thoroughly impressed on a community that it takes years to regain its normal condition of immunity from other diseases.

Treatment—*Prophylaxis*.—As in all diseases, attend to hygiene. It seems that no precaution will prevent an attack, not even the much-abused daily dose of quinine and whisky, which seems to favor rather than retard its invasion. During an epidemic be regular in hours of sleep, work, and recreation. Avoid all unnecessary stimulation and drugging; eat nothing but substantial, nutritious, wholesome, and easily digested foods; avoid carousals, unnecessary fatigue, worry, and venereal excesses; keep the bowels active every day, and avoid a sedentary, indoor life; sleep in well-ventilated rooms. If any preventive measures will avail, these will; if they do not you will be in the best possible condition to abort or endure an attack.

Active Treatment.—Put the patient in bed and keep him there until convalescence is well advanced; darken the room; bathe frequently with tepid water. *Pain* is the leading symptom, and can be relieved by two or five grains of phenacetin every two or three hours, given with hot water; or pill acetanilide comp., every half-hour until relieved; or the salicylates.

Pill acetanilide comp:

R

Acetanilide.

Quininae bisulphatisaa. gr. j.

Cocainæ hydrochloratis gr. $\frac{1}{16}$.

M. Fiat pilula vel tablet., compress., No. 1.

R

Sodii salicylatis 3 jss.

Liq. ammonii acetatis f $\frac{3}{4}$ jss.

Syr. aurantii flor.q. s. ad. f $\frac{3}{4}$ ij.

M. Signa. One teaspoonful every two hours until relieved, then every three or four hours as necessary.

These combinations relieve pain, reduce fever, are antiseptic and favor diaphoresis. Apply ice to the head, if desirable. Follow the relief of pain by the administration of triturated calomel, one-tenth grain, every hour until free action is obtained. Calomel will also relieve nausea and irritation of the stomach and bowels.

Cough and catarrhal symptoms are treated as acute laryngitis and bronchitis. *Avoid all depressants*, and administer tonics as indicated. Let the *diet* be most nutritious, liquid and non-irritating albuminoid products—milk, wine-whey, broths, beef-extracts, boiled rice, or rice-milk. *During convalescence* give tonics of cinchona, iron, arsenic, and strychnine. For a persistent cough, following an attack, nothing is better than malto-yerbaine, one dram, three or four times daily. Complications must be met as they arise.

RELAPSING FEVER.

Synonyms.—*Febris recurrens*; famine fever; bilious relapsing fever.

Definition.—An acute, contagious, self-limited, epidemic fever, recognized by a *sudden onset* with chill, high fever, pains in the head and muscles, jaundice, and vomiting. Lasts for seven days; has a distinct *remission* of six or seven days, and a *return* of all symptoms as at first.

Etiology.—Caused by the *Spirochata Obermeieri*. Contagious. Development is favored by filth, crowding, bad hygiene, and lack of proper diet. *Period of incubation* is one to fourteen days.

Symptoms.—*Onset* is sudden, without prodromal symptoms. Chill or rigor followed by high fever, 102° to 106° F.; violent headache; sharp, shooting pains in the muscles of the legs, back, and arms; nausea and vomiting; epigastric tender-

ness; liver and spleen are swollen and tender to pressure; anorexia, great thirst, and insomnia; tongue is coated with a thick white coating.

As temperature increases, pains and other symptoms are aggravated. *Jaundice* frequently occurs on the third or fourth day and is often pronounced. *Urine* contains bile-pigment, decrease of the chlorides, and may show a trace of albumin. *Herpes labialis* is a frequent complication; delirium is a late symptom. On the seventh day *crisis* comes suddenly with profuse perspiration and rapid fall of temperature to normal or subnormal. Patient feels well, except weak. *Convalescence* takes two or three days, and is apparently complete.

On the fourteenth day from the onset *the attack repeats itself*, and all symptoms return. Crisis occurs in three to five days. Relapses may occur four or five times, or not at all.

Complications.—Pneumonia; pleurisy; intense hyperæmia or rupture of the spleen; jaundice, acute or chronic; inflammation of the salivary or cervical glands; epistaxis or hæmatemesis.

Pathology.—Undoubtedly due to the *Spirochæta Obermeieri*, a spiral or corkscrew-shaped filament found in the blood during the height of the fever, and entirely absent during the interval. These spiral filaments multiply rapidly, possess a rotary spiral motion, and are about $\frac{1}{5000}$ to $\frac{1}{10000}$ inch in length. Spleen and liver are enlarged and hyperæmic.

Diagnosis.—The positive diagnostic sign is a microscopical demonstration of these spirillæ in the blood.

Prognosis.—Not commonly fatal; death is most common during the height of a first attack or at crisis. Convalescence is prolonged and slow.

Treatment.—Rest in bed, with free ventilation, isolation, and best hygienic surroundings. Give a *diet* such as is given in typhoid fever, during the attacks; but in the intervals give

good, rich milk, rare beef, soft boiled eggs, and ripe fruits. Begin treatment with a free calomel purge. Sponge the body with tepid water and alcohol every few hours; give cold water and cracked ice.

Infusion of digitalis, f ̄j, with acetate of potash, gr. v, every four hours. Pill acetanilide comp. (form, p. 27), every hour for five or six hours, often relieves muscular pains and headache. Cold baths for hyperpyrexia. If pains are very severe, administer morphina sulph., gr. $\frac{1}{4}$, and atropina sulph., gr. $\frac{1}{20}$, hypodermically, to be repeated in half an hour if necessary. Carbolic acid, iodine, sulphocarbolate of zinc, and salol are claimed as excellent antiseptics and of possible use when internally administered. *Stimulate* freely during crisis or as demanded. *Avoid all depressants.* During convalescence give tonic treatment. Enforce prophylactic measures to prevent contagion.

EPIDEMIC CEREBROSPINAL MENINGITIS.

Synonyms.—Spotted fever; cerebrospinal fever; cerebrospinal typhus; apoplectic cerebral typhus; epidemic meningitis. The Germans call it *Genickkrampf* and *Nackensteife*.

Definition.—An acute, specific, epidemic, malignant, infectious fever, recognized by spasmodic muscular contractions of the muscles of the neck and back, hyperæsthesia, together with a peculiar eruption (not constant).

Etiology.—It is due to a round micrococcus called *Micrococcus intracellularis meningitidis*, usually occurring in groups of two (*diplococci*). Epidemic and *not contagious*. Most common in winter among young adults. Acute diseases predispose one to attacks during epidemics. *Period of incubation* is nearly seven days.

Symptoms.—*Prodromal symptoms* are headache, loss of appetite, malaise, and general pains. *Onset* is sudden, with a severe

chill or rigor, violent *pain in the head*, persistent vomiting, and a feeling of giddiness. *Photophobia* and intolerance of noise; pupils are contracted at first, but dilated later. *Convulsions* often appear early; delirium. Headache is so severe that the patient cries out with it. There is stiffness and soreness in the muscles of the neck and back during the first and second days, which soon assumes a severe form, with tetanic convulsions, in which the head is drawn back, and frequently accompanied by *oposthotonos*. The body may assume a straight, rigid state—*orthotonos*. Patient lies on side, with legs flexed on abdomen. Pains in the joints are often severe; skin is hyperæsthetic; quantity of urine is profuse. *Temperature* varies from 102° to 107° F., and assumes no regular type. Deafness, loss of sight and smell, temporary or permanent.

Eruption appears from the third to the sixth day, and is either herpetic, on the face and ears, or a diffuse urticaria, erythema, or purpura. The only peculiarity of the eruption is the fact that it occurs symmetrically on different parts of the body. Disease reaches its height about the tenth day, and declines by lysis or assumes a more serious form, resulting in death. *Convalescence* is long, and often extends over many months. Among serious sequelæ are loss of hearing, sight, and smell; deaf-mutism; headache that persists for years afterward; progressive emaciation; epilepsy or special paralyses.

Fulminant or foudroyant cases are those malignant attacks where the patient dies a few hours after the onset, and occur most commonly in the early part of epidemics.

Abortive cases are those whose symptoms are not well defined, and are followed by recovery after a few days in bed, or a short period of indisposition; most common during the decline of an epidemic.

Hysterical cases occur in excitable, nervous women and children, are never fatal, and are easily distinguished by physical examination.

Pathology.—The disease is caused by a diplococcus called *Micrococcus intracellularis meningitidis*, which, by some unknown selective action, produces an inflammation of the meninges at the base of the brain and medulla oblongata, involving the ventricular structures. Post-mortem examination shows an exudation of lymph and pus on the pons, chiasma, sulci, large vessels, posterior part of the medulla, and the ventricles. Congestion of the base of the lungs; hyperæmia of the liver, spleen, and kidneys. *Rigor mortis* is prolonged, and staining of the body marked.

Diagnosis.—*Typhoid fever* does not begin so abruptly; has no high rise of temperature during the first and second days; time and character of eruption are different, and it runs a different course.

Simple sporadic meningitis has no loss of special senses; symptoms less marked; no muscular contractions of severe type; absence of peculiar eruption, and is not epidemic.

Prognosis.—Must be guarded. Simplest cases often become most severe. Relapses are very common. A mean mortality is given as forty percent. Always advise as to possible sequelæ.

Treatment.—Treat on the same principle as simple meningitis, *q. v.* Observe best hygienic surroundings to prevent its spread. Treat complications and sequelæ as demanded.

TYPHUS FEVER.

Synonyms.—Camp fever; jail fever; ship fever; putrid fever; stupid fever.

Definition.—An acute, contagious, epidemic fever, recognized by a sudden onset, high fever, great depression, stupor, and the appearance of a petechial eruption on the fifth day.

Etiology.—The primary cause is a distinct germ. It is both epidemic and endemic. Close crowding, close confinement, filth, decomposing vegetable matter, uncleanness, improper diet, and general debility are predisposing causes. It often breaks out in overcrowded, poorly ventilated jails, ships, and tenement-houses. Most common among the poorer classes. It is *highly contagious*.

Symptoms.—For several days prior to the onset there are tired feelings, headache, loss of appetite, dizzy and chilly sensations. *Onset* is heralded by a chill, nausea, vomiting, and *high fever*, 102° to 104° F., on the first or second day. Pulse and respiration increased; tongue coated with a yellowish-white coating; *constipation*; throbbing headache, face flushed, and photophobia. *Urine* is scanty, high-colored, and often contains albumin. On the *fifth day* a *petechial or mulberry rash* appears on the abdomen, chest, arms, and legs; little or no eruption on the face and neck. The *eruption* consists of petechial spots which do not disappear on pressure and do not come out in separate crops; most pronounced from the seventh to the tenth day, when it begins to fade, and finally disappears between the fourteenth and twentieth days.

A characteristic symptom is the peculiar *blank facial expression*; contracted pupils; absolute indifference to conversation and surroundings. All symptoms reach their height about the *second week*, when there is continual delirium of a low muttering type, or it may be wild and maniacal. *Coma* may supervene, together with subsultus tendinum, involuntary passage of urine and faeces. *Tongue*, during later stages, is dry, brown, and fissured; teeth and lips covered with sordes. There is a peculiar *mouse-like odor* about these cases, most marked during the second or third week. Bed-sores are common.

Crisis comes about the fifteenth day, when the temperature

falls nearly to normal or subnormal in twenty-four hours. All other symptoms subside, leaving the patient very weak, pale, and emaciated. Death may ensue at crisis from paralysis of the heart or complications of pneumonia, coma, or relapses.

Pathology.—Typhus fever is due to a germ the exact nature and action of which are not determined. There are no constant pathological lesions by which to determine where the disease is central. Post-mortem examination shows the general muscular tissues, including the heart, in a state of fatty degeneration and quite friable. Blood is thin, dark in color, and forms imperfect clots. Liver, spleen, and kidneys are enlarged and friable.

DIAGNOSIS.

TYPHUS FEVER.

Short prodromal symptoms.
High fever during first day, irregular in course.
Constipation.
Slight general abdominal tenderness.
Petechial eruption on fifth day; not in successive crops; not influenced by pressure; covers whole body.
Ends in three weeks by *crisis*.
Peculiar mouse-like odor present.
Highly contagious.
Early delirium and cerebral symptoms.
No involvement of Pyer's patches.

TYPHOID FEVER.

Long prodromes, with epistaxis.
Fever rises slowly and regularly for seven or eight days.
Persistent, pea-green diarrhoea.
Marked tenderness in right iliac fossa.
Eruption on seventh day; comes in crops; disappears on pressure; limited to abdomen, chest, and back.
Ends in five or six weeks by *lysis*.
No characteristic odor.
Infectious; possibly slightly contagious.
Late delirium and cerebral symptoms.
Pyer's patches the seat of disease.

Prognosis.—Occurring in hearty, strong individuals, it is good. Quite fatal in young children, aged and debilitated persons.

Treatment.—*Isolation* and the strictest antiseptic measures are imperative. Ventilate the sick-room freely, destroy all

excreta by fire, and follow prophylactic measures as indicated on page 21. Constantly watch patient to prevent accidents during delirium. Establish free action of the bowels by full doses of calomel and ipecacuanha. No known remedy will abort or shorten the disease. *Salol*, gr. v, or *sulphocarbolate of zinc*, gr. iiij-v, every four hours through the whole course, seems to mitigate unfavorable symptoms by its possible antiseptic action. Reduce fever by cold baths, cautiously administered as often as necessary. *Avoid depressants*; stimulate freely. Quinine is of doubtful utility.

Feed at regular intervals with milk, beef-extracts, whites of eggs in cold water, or good broths. Carbonated or alkaline waters can be used at liberty. Sponge the body several times daily with cold water and acid bichloride of mercury. *Administer carbonate of ammonia at crisis* to prevent heart-failure. Watch the bladder closely to avoid retention of urine. Ice applied to the head will relieve headache. *Chloral* is the best remedy for coma vigil. Meet complications as they arise.

THE PLAGUE.

Synonyms.—Oriental plague; Levantine plague; bubonic plague.

Etiology.—Due to some specific microörganism; *contagious*; self-protective. Virus is carried on clothing and merchandise; warm, damp weather favors its development; occurs principally in low, marshy districts. Filth, poverty, overcrowding, and bad hygiene favor it. *Period of incubation* is from three to seven days.

Description.—The plague was most active during the middle ages, but has since occurred in Oriental countries as an epidemic at irregular intervals. During 1892 it was present

in some parts of the East, and at this time (1894) is epidemic in China, and the mortality is very great.

There is a short *prodromal period* of malaise, depression, headache, anorexia, attacks of giddiness or syncope, and slight fever. *Onset* is preceded by chilly sensations or a chill, followed by rise of temperature to 103° to 107° F.; rapid pulse, 120; tongue moist and red at first, but soon becomes covered with a brown coating as in typhoid fever; a general typhoid condition soon follows. Death may occur in one or two days, and is frequently preceded by a petechial eruption, hæmaturia, and hæmatemesis. About the third day *buboes* form in the groin, axilla, or neck, and vary in size from a pigeon's egg to a hen's egg. When buboes form, fever and delirium lessen; skin is covered with perspiration; pulse falls to 90 or 100. Buboes often break spontaneously, and pursue a long course of suppuration. *Carbuncles* not infrequently appear in large numbers on the nates, neck, back, and arms. Convalescence is very slow and tedious. Pneumonia, dropsy, paralysis (general or local), pyæmia, or mental troubles may complicate or follow.

Pathology.—Due to a specific germ which seems to develop best in low, marshy districts during hot, damp weather. The germs have a selective action for the lymphatic system, in which they cause inflammation and suppuration. After death the spleen is enlarged, soft, friable, and dark in color. Serous membranes are blood-stained and ecchymosed. Internal lymphatic glands are enlarged, swollen, and in a state of suppuration.

Diagnosis.—An epidemic of the plague is diagnosed by the high fever, appearance of buboes and carbuncles in large numbers, and the great mortality. It is frequently mistaken for typhus fever, to which disease it bears some resemblance.

Prognosis.—The mortality during past epidemics ranged

from sixty to ninety percent. Modern antiseptic treatment may diminish mortality.

Treatment.—Isolation and preventive treatment, as given on page 21. Most nutritious, stimulating, and sustaining diet. *Avoid depressants.* Pill acetanilide comp., every half-hour or hour (form, p. 27); salol, gr. v, every four hours; sulphocarbonate of zinc, gr. v, every four hours, with a view to antiseptis. Infusion of digitalis and acetate of potash as indicated. Cold baths to reduce temperature. Constant applications of antiseptic lotions to buboes and early incision. Meet complications and give tonic treatment from first until convalescence is complete.

TYPHOID FEVER.

Synonyms.—Enteric fever; entero-mesenteric fever; abdominal typhus.

Definition.—An acute, infectious, self-limited fever, recognized by long prodromes, epistaxis, abdominal tenderness, diarrhœa, enlarged spleen, marked nervous symptoms, a petechial eruption appearing in crops on the abdomen on and after the seventh day, and a characteristic temperature-chart rising gradually by regular intervals for seven days, remaining stationary for one or two weeks, and declining by lysis.

Etiology.—It is caused by a specific, pathogenic germ called the *bacillus typhosus*, which is capable of reproduction in decomposing vegetable or animal matter, or within the large and small intestines, when in a condition of lowered vitality. Among *predisposing causes* is the use of infected drinking-water, milk, vegetable and animal food; overcrowding, filth, prolonged hot and dry weather following or preceding a wet spell. May be derived directly from the excreta of patients.

Epidemic at times. *Never originated de novo*—spontaneous generation is impossible. Young adults are most susceptible. It is *not self-protective*, and may occur an unlimited number of times in the same person. *Period of incubation* varies from one to four weeks.

Symptoms.—One to four weeks preceding the onset, *an uncertain period of incubation*, there are certain characteristic *prodromal symptoms*. Patient complains of a general tired feeling with slight muscular soreness, pain in the back and bones, headache, lack of usual energy, loss of appetite, and restless sleep, disturbed by dreams; attacks of vertigo or giddiness; occasional mild or profuse *epistaxis*; nervous and irritable; cold, creepy feelings; tendency to diarrhœa (at times marked constipation); a flushed, feverish appearance toward evening, and floating spots before the eyes.

Onset is variable. Patients sometimes take to their beds from exhaustion or debility when the temperature begins to rise. Others have a distinct chill or rigor followed by a slight rise in temperature, severe headache, and diarrhœa. Pulse is quick, soft, and may be dichrotic; respiration increased; short, hacking, unsatisfactory cough; *tongue* is red at the tip and edges, with a brown coating in the center. *Evening temperature* rises one and one half to two degrees every day, and, in the morning, falls one degree below the temperature of the previous evening. This continues for six or seven days until 104° or 105° F. is reached, when it continues about the same height for seven or ten days, with about one degree between morning and evening temperature.

Between the seventh and tenth days the disease assumes its typical form. Patient is dull and listless; picks at the bed-clothing for imaginary objects; has low, muttering delirium; headache; tongue is dry and red on sides and edges, a red line running down its center, and a white coating on each

side. Teeth and gums are covered with thick sordes; profuse epistaxis may occur. *Diarrhœa* continues, and assumes a condition similar to green-pea soup, and is very offensive; *spleen* is enlarged and tender; abdomen prominent, tympanitic, with gurgling, rumbling, and crepitation, and marked tenderness in the right iliac region.

Eruption.—About the seventh day a characteristic eruption appears on the abdomen, chest, and back in the form of rose-red spots, varying from one to four lines in diameter, isolated, and disappearing on pressure. These spots come in *successive crops* of five to twenty, each crop fading in about four days, and so continuing until the twenty-first day of the disease, or disappearing at death.

At the end of the second week *intestinal hemorrhages* are most prone to occur, usually indicated by a sudden fall in temperature, great pallor or syncope, and a discharge of clotted or bright-red blood from the bowels. Sloughed portions of the intestines may be passed. *Urine* is scanty, high-colored; specific gravity high; late increase of urates; albumin may be present; retention or passed involuntarily. *Subsultus* is a marked late symptom. Temporary or permanent deafness.

Between the twelfth and fourteenth days, it declines by lysis. Temperature falls regularly. The morning temperature falls one degree each day, but the evening temperature remains about the same for several days, and then declines as it rose. Fever is liable to intermit and remit before convalescence begins.

The *fastigium* or height of the disease lasts from the seventh to the twelfth or fourteenth day, but there are cases where it appears to run for several weeks. Such cases enter what Wunderlich calls an *ambiguous period*. Relapses are prone to recur. *Pneumonia* frequently complicates typhoid fever, and is heralded by a sudden fall in temperature, followed in a few

hours by a sudden rise. *Perforation* is usually attended by profuse hemorrhage, collapse, and peritonitis. Bed-sores are common in later stages. Convalescence is long, tedious, and slow.

Walking typhoid fever is a term applied to those cases which pursue an apparently mild or insidious course during the first and second weeks, in which time the patient goes about business in a listless way, not feeling sick enough to consult a physician. These cases often terminate fatally or with most serious consequences, owing to a lack of proper diet during the earlier stages. Walking typhoid does not imply mild typhoid by any means.

Pathology.—Typhoid fever is caused by the *bacillus typhosus*, which flourishes in the large and small intestines, when in a state of lowered vitality, attacking the solitary glands and glands of Peyer. These germs grow at the expense of surrounding tissues, produce ptomaines, and act as irritants, causing congestion and inflammation of the structures named. As a further result of irritation, intestinal secretions are increased, and, when mixed with ptomaines and waste products, cause pea-green, offensive diarrhœa. Furthermore, these ptomaines are absorbed, carried into the general circulation, and by their action on the various nerve-centers produce systemic conditions—fever, delirium, stupor, and headache. Pyogenic germs soon complicate the action of the *bacillus typhosus* (a mixed microbic infection), and the simple inflammation of Peyer's glands assumes an ulcerative type, often resulting in perforation of the intestine, with hemorrhage from eroded capillaries or vessels, and peritonitis. Post-mortem shows Peyer's glands swollen, elevated, red, and ulcerated; mesenteric glands enlarged, inflamed, and ulcerated; enlarged, dark-red, friable spleen; kidneys and heart are soft and granular; lungs are congested.

Diagnosis.—There are seven diagnostic points, viz. : (1) long prodromes ; (2) epistaxis ; (3) peculiar temperature ; (4) abdominal symptoms—gurgling, tympany, tenderness in right iliac region, and diarrhœa ; (5) characteristic eruption on seventh day ; (6) nervous symptoms ; (7) prolonged convalescence. From *Typhus Fever*, see p. 34.

Prognosis.—Must always be guarded. Mild cases usually recover in four to six weeks. Convalescence is slow, and lasts from four weeks to a year. Latent tuberculosis is often brought into activity by an attack. Hemorrhage, perforation, and complications are bad signs.

Treatment.—Follow strictest prophylaxis and antisepsis, as indicated on page 21.

Rest in bed during the whole course of the disease. Patient should use a bed-pan and not be allowed to rise. Excitement, noise, and worry must not be permitted. A nurse should be in constant attendance day and night ; temperature should be noted two or three times daily, and the greatest care taken to properly dispose of all excrementitious products. Watch the bladder to detect retention of urine.

Diet.—Probably no more important subject demands our attention than that of diet. *Solid foods must be absolutely forbidden*, as they irritate the intestinal mucous membrane and produce ulceration and perforation. Let diet consist of milk and lime-water ; animal broths ; beef-extracts ; corn-starch, soft boiled rice, tapioca, or sago, provided they have been passed through a fine sieve to remove solid particles ; white of egg given in ice-water with a pinch of salt. Avoid oat-meal. *Feed at regular intervals of four hours*, and never give large amounts at one time. Brandy may be given with milk if desired or indicated. Pig's-feet jelly (provided it has been strained to remove solid particles), given with vinegar, affords slight variety. Wine-whey is good. The general rule for

diet is to avoid all solid, indigestible, or irritating articles, and give liquids or jellies of a bland, nutritious, unirritating quality.

If seen before or at the onset, administer a free cathartic of calomel (one-quarter grain triturate, every half-hour, until free catharsis results) or a full dose of castor-oil. *Never administer active cathartics after the first week of the disease.* There is *no specific* for typhoid fever, but the rational method of treatment is based on the principle of *intestinal antiseptics*. To this end, *sulphocarbolate of zinc*, given in one to five grain doses every three or four hours, through the whole course of the disease, lessens fever, delirium, diarrhoea, and changes the character of intestinal and nervous symptoms. Given in three to five grain doses in the prodromal stage it has checked many cases that might ultimately have terminated in typhoid fever. Sixty grains of the drug daily will cause no toxic symptoms.

Salol, gr. v, every four hours; beta-naphthol, gr. j-v, every four hours, and salicylic acid are advocated as intestinal antiseptics. Hydrochloric acid dilute, gtt. x-xx, every three hours, is astringent, antiseptic, and is used during the whole course. Bichloride of mercury is not reliable as an intestinal antiseptic, for it is converted into the inert albuminate of mercury in the stomach. Tincture of iodine and carbolic acid are of service. Many other remedies have been used, but the above list will suffice as a reliable working-outline from a medicinal standpoint.

Special Symptoms.—*Fever* is a symptom only, and not the disease; it is nature's method of resisting disease. As long as temperature is below 103° F., little damage will occur. Quinine, acetanilide, phenacetin, and other drugs, in antipyretic doses, are too irritating and depressing. Give a sponge-bath with cold water and alcohol, every two to six hours, to

remove secretions from the skin and reduce temperature. In hyperpyrexia, or high fever, use cold baths (p. 23) to reduce temperature, rather than antipyretic drugs. Intestinal hemorrhage, collapse, or pulmonary congestion contra-indicate cold baths.

Diarrhœa.—Usually controlled by the sulphocarbolate of zinc or salol. If profuse, administer bismuth salicylate or other astringents, exercising care not to stop secretions and excretions entirely, for these products act harmfully if retained in the intestines.

Hemorrhage.—Acetate of lead, zinc salts, tannic acid, and oil of turpentine are most commonly employed. Oil of turpentine (five to ten drops in an emulsion every three or four hours) is indicated in extreme *tympany*, tenderness, or actual hemorrhage.

Headache, a common symptom, is lessened by applications of ice or the administration of the bromides, acetanilide, phenacetin, or pill acetanilide comp. (form, p. 27).

Convalescence is slow. Avoid solid food and active cathartics for several weeks. Perforation has taken place more than one month following convalescence—one case is recorded at three months. Stimulants, best nutritious diet, freedom from all business care, and an out-door life for six months or a year.

Observation.—Typhoid fever will run its course in spite of all medicinal remedies (so-called specifics), and best results are to be obtained from efficient nursing, proper attention to diet and hygiene, and the avoidance of the system of dosing with medicines.

PERIODICAL FEVERS.

YELLOW FEVER.

Synonyms.—"Yellow Jack"; typhus icterodes; malignant bilious fever; sailor's fever; Mediterranean fever.

Definition.—An acute, contagious, malignant, epidemic or endemic, paroxysmal fever, occurring in warm climates, and recognized by sudden onset with high fever, a remission, followed by deep jaundice, black vomit, and collapse.

Etiology.—Caused by a specific germ, as yet not discovered, which flourishes best at a temperature above 72° F., and is rendered inert by frost or heat of 225° F. Primarily it is a disease of tropical climates, usually along the coast, but frequently invades temperate climates of high altitude. In South America, the West Indies, and along the shores of the Mediterranean it is endemic, not spreading rapidly among the natives, but attacking strangers who are not acclimated. It is distinctly *non-malarial* in character. *Self-protective*. Very contagious from infected clothing, merchandise, and the body of the sick. *Period of incubation* varies from six to ten days.

Symptoms—*First Stage*.—Prodromes of headache, general malaise, uneasiness, anorexia, and feverish tendency. *Onset* is sudden, with a severe chill (occasionally prolonged), followed by high fever, 102° to 105° F.; dry, hot skin; quick, tense pulse; eyes unusually bright and liquid; severe pains in forehead, back, legs, and epigastric region; general muscular soreness; no delirium or loss of consciousness except in very severe cases; bowels constipated; tongue coated, moist, and flabby. A peculiar odor exists with these cases. *Urine contains albumin*. In thirty-six to forty-eight hours fever remits, and the disease assumes a different phase.

Second Stage.—Temperature varies from 97° to 101° F.; all

symptoms subside; stomach is irritable; conjunctivæ assume a yellow hue and the skin is tinged with yellow. Patient feels well and desires to be up. Bowels move freely, and passages are dark and biliary. Convalescence may begin here, and patient recover in one or two weeks. On the other hand, about one to four days following the remission, he passes into the last stage.

Third Stage—Collapse.—All symptoms return; pulse falls, is irregular and compressible; skin is dry, cold, and deep yellow or bronzed, with livid spots here and there; hemorrhages from the nose, ears, lungs, stomach, and internal organs are quite characteristic. Vomiting is frequent, and is black and grumous—black vomit. *Urine* is dark, albuminous, and often suppressed; consciousness is retained until death. Convalescence is very slow and tedious.

Pathology.—The pathogenic germ has never been isolated, nor is it known how or where it is most active. Many symptoms seem to point to the gastro-intestinal canal as its habitat. Post-mortem examination shows that the heart has undergone granular degeneration; fatty degeneration of the liver; stomach and intestines congested and ecchymosed, and mucous membrane soft and friable. Kidneys are soft, granular, and show a condition of tubular nephritis; hemorrhages into various serous cavities.

Diagnosis.—Yellow fever is recognized by being epidemic or endemic; sudden onset, high fever, black vomit, albuminuria, one remission, deep jaundice, and running its course in a few hours or one week at most.

Prognosis.—A very fatal disease. Mortality varies from ten to fifty percent. in different epidemics.

Treatment.—Follow prophylactic measures strictly as indicated on page 21. Patient must be put in bed at once and entirely isolated. If possible, administer a full dose of calo-

mel, gr. x, and soda bicarbonate, gr. x, and follow at once with sulphocarbolate of zinc, gr. v, every three hours, or salol, gr. v, every four hours. Use cold baths for hyperpyrexia. Drink freely of alkaline, carbonated waters. Ice should be taken freely. Carbolic acid, gr. $\frac{1}{4}$, every two hours, is recommended. Cleanse lower bowel frequently with injections of cold water and sulphocarbolate of zinc (one dram to the half-pint). *Avoid depressants, and stimulate from first.*

Diet.—Let it be liquid, consisting of beef-extracts, milk, and lime-water, or prepared infant food, given at regular intervals of three or four hours in small quantities.

MALARIAL FEVERS.

Malaria (Italian for “bad air”) is a term applied to a group of fevers or toxæmia which are endemic in tropical and temperate regions, and produced by a miasmatic poison or bacillus called the *bacillus malaria*, isolated by Lemaire, Klebs, and others. Malarial poison develops in low, marshy flats, meadows, swamps, and damp forests where a large amount of decomposing vegetable matter is exposed for a long period to the heat of the sun; is most active during the hot, dry months of summer, in tropical climates, between the hours of sunset and sunrise, and rises with the fog several feet from the ground; hence is capable of dissemination by currents of air. Malaria also exists in high elevations where temperature and conditions of the soil are favorable. Malarial poison usually enters the system through the respiratory tract, but may be taken in drinking-water and vegetable food. People who have not lived in malarial districts are very susceptible, and contract it readily. Colored people seem to possess a peculiar immunity, but may have it. One attack predisposes

to another, and the disease may become active in the system many weeks after exposure, when the patient has moved to a non-malarious district.

Period of incubation is very uncertain, and varies from a few days to two or three weeks.

Malarial Types.—(I.) Intermittent fever; (II.) remittent fever; (III.) pernicious malarial fever; (IV.) chronic malaria.

I. INTERMITTENT FEVER.

Synonyms.—Ague; chills and fever; mild malarial fever; paludal fever.

Definition.—An acute, infectious, paroxysmal malarial fever, recognized by a distinct chill, lasting about one hour, followed by a period of great heat, and declining by profuse sweating, leaving the patient without fever and in an apparent state of health for an uncertain period of time, only to return again.

Symptoms.—There may be slight headache, general indisposition, anorexia, nausea, and uneasiness preceding the onset.

Onset or cold stage begins suddenly with a decided and prolonged chill; skin is rough, pale, and cold (*cutis anserina*); nails and lips are blue; teeth chattering; great thirst; intense headache; vomiting; urine pale and copious; pulse small and tense; temperature is 101° to 105° F. This continues for about one hour, and is followed by a hot stage.

Hot Stage.—Chill gradually ceases, and patient begins to feel hot and flushed; skin assumes a dry, burning feeling; pulse is full and rapid; temperature varies from 103° to 107° F.; urine is scanty and feverish; face puffed; headache intense; spleen enlarged. This stage varies in duration from three to four hours or longer.

Sweating Stage.—The dry, hot condition of the skin gives

way to profuse sweating, which continues for several hours and soaks all the bed-clothing; tongue is moist; temperature falls gradually to normal, and all symptoms disappear, leaving the patient weak and nervous for a short time, when there is a distinct *intermission*, during which he enjoys apparent health.

Varieties.—*Quotidian ague* has a distinct paroxysm every day; *tertian ague*, every other day, and is the most common form; *quartan ague*, every fourth day; *double quotidian ague*, two attacks daily; *double tertian ague*, one paroxysm every day, the alternate ones being most severe. One type may change to another or assume a remittent form. *Masked intermittent or dumb ague* does not have three stages; one stage may be replaced by facial neuralgia, or, in fact, no other symptom may exist except periodical neuralgia dependent on malarial poison.

II. REMITTENT FEVER.

Synonyms.—Bilious remittent fever; marsh fever.

Definition.—A paroxysmal malarial fever of hot climates, recognized by a high rise of temperature, with active symptoms, followed by a short remission, in which *temperature never falls to normal*, and a return of all symptoms in a few hours.

Symptoms.—*Onset* is sudden, with a slight chill, headache, restlessness, aching pains in the arms and legs, thirst, nausea and vomiting, high fever, 102° to 107° F.; pulse full, tense, and rapid; constipation; delirium; conjunctivæ congested; epigastric oppression or soreness.

Remission in six to eighteen hours after onset, when sweating begins and all symptoms lessen. Headache, nausea, and general pains cease, and temperature falls to 99° or 100° F.

(but never reaches normal during a remission), when patient sleeps calmly. In a few hours fever and all symptoms return with renewed vigor, but without an initial chill. Spleen is swollen and tender. Disease usually runs its course in one to three weeks, is quotidian in type, and may assume a typhoid form. Occasionally these cases run into chronic malaria, leaving such nervous symptoms as severe headache or local palsies. *Jaundice* often occurs, and may be mild or quite severe.

III. PERNICIOUS MALARIAL FEVER.

Synonyms.—Pernicious fever; malignant, intermittent or remittent, fever; congestive fever.

Description.—A malignant malarial fever, pursuing the same course as intermittent or remittent fever of the tertian or quotidian type, with the addition of intense congestion or hemorrhage from one or more internal organs, and general aggravation of all symptoms. Symptoms vary according to the organs affected. Fatality is most liable to follow second or third attacks.

Cerebral Variety.—Intense congestion of the brain, effusion of serum into the ventricles, or cerebral apoplexy. There is delirium, stupor, or coma; pulse is slow and full; skin is either dusky or quite flushed; delirium may be very violent and maniacal. Death is due to coma, meningitis, or complications.

Gastro-enteric Variety.—Nausea, vomiting, bloody diarrhœa, anorexia, and intense thirst. Abdomen is not tender, but there is a sense of fullness or oppression in the epigastric region; skin is cold and clammy. Symptoms may remit or intermit, and death ultimately ensue from exhaustion. Paroxysms last about six hours.

Thoracic or Pulmonary Form.—Great dyspnoea; congestion of the lungs, with all attending symptoms; weak pulse; skin is dusky and cold. Most fatal form.

Algid Form.—Cold stage appears to be prolonged, even though the temperature is high, until pulse decreases and is finally lost; body becomes cold; temperature falls to 85° or 95° F.; voice is very faint; expressionless face; absolute clearness of the mind until death; great thirst. May have vomiting and serous discharges from the bowels.

Hemorrhagic Form.—It is closely allied to the congestive, and occurs in those who are subject to malarial attacks. Begins with a prolonged chill, epigastric distress, nausea and vomiting, headache, uneasiness, and *deep jaundice*. *High fever* soon follows; great thirst; pains over region of liver, stomach, and kidneys; *urine* is smoky, and contains red blood-corpuscles. Epistaxis and intestinal hemorrhages, with signs of cerebral congestion. Uremia may develop. During remission or intermission, all symptoms lessen or disappear. Liver and spleen are enlarged. *Convalescence* is very slow. Usually of the quotidian type.

IV. CHRONIC MALARIA.

Description.—Persons who have been exposed to the malarial miasma for several years gradually become accustomed to its influences, and are not often seized with acute attacks. Such persons complain of general malaise, indigestion, anaemia, high-colored urine, insomnia, headache, dizziness, ringing sounds in the ears, no fever, sore, tired feelings in the muscles and bones. The skin becomes brown or bronzed. Morris says, "The skin looks like an old, dirty buckwheat-cake." Spleen is enlarged, hard, tender, and occupies a large portion of the abdominal cavity; this enlarged spleen is called *ague-*

cake. Liver is often enlarged. In fact, the patient possesses a general cachectic appearance peculiar to malaria.

General Pathology.—All forms of malarial fevers arise from the same cause, namely, a miasmatic poison or germ called the *bacillus malarie*. It is possible that this germ is most active in the lymphatic and circulatory systems, but its method of action, reproduction, and growth still remains in obscurity. Why the disease assumes a quotidian type in one person and a tertian in another is not known. Direct transfusion of blood from malarial to healthy patients during the active stage of the disease will reproduce the disease in the latter, although it cannot be transmitted by any other means from the sick. The *cold stage* is caused by a temporary contraction of the superficial arterioles of the skin, causing poor circulation. *Hot stage* is produced by a relaxation of the capillary vessels and an unusual engorgement of the superficial vessels. Profuse sweating depends upon a lack of vaso-motor power and temporary loss of inhibition of the sudoriferous glands. Post-mortem examination shows an enlarged, hard spleen with thickened capsule and trabeculae (*ague-cake*); slight enlargement of the liver; blood contains pigmentary masses which adhere to the blood-corpuscles (*melanæmia*), most marked in remittent and pernicious fever; hyperæmia of the brain and other organs; general discoloration of the skin, spleen, and liver, from pigmentary deposits from the blood.

Diagnosis.—*Pyæmia* is distinguished by peculiar hectic fever, irregularity of chills, causation and formation of abscesses. *Intermittent fever* has normal temperature during the intermission, while the temperature and symptoms of *remittent fever* never become normal during the course of the disease.

Yellow fever is epidemic; short in duration; has one paroxysm only; black vomit; clean or slightly coated tongue;

peculiar expression of the eyes; delirium is mild or absent; albuminuria; is self-protective; does not respond readily to treatment.

Prognosis.—*Intermittent fever* terminates in recovery or chronic malaria. *Remittent fever* affords a favorable prognosis. *Pernicious fever* is fatal in a large percentage of cases in a few hours to four days—death usually ensuing in the second or fourth paroxysm. *Chronic malaria* is amenable to treatment, but relapses very easily.

Treatment.—*Prophylaxis.*—Avoid malarious districts; or, if compelled to live in them, do not go out of the house during the night and early morning hours until the sun has cleared away fogs, for these afford an easy method of infection. Do not drink water that is at all doubtful unless it has been previously sterilized. Keep the bowels active, and observe regular habits of diet, work, and rest. Avoid all unwholesome food. Thorough drainage and cultivation of marshy districts have done much toward eradicating malaria. Eucalyptus trees are said to absorb and destroy malarial poison, but modern research tends to disprove this, as their only virtue lies in absorbing moisture and breaking currents of wind which might disseminate the poison. Shrubby and foliage of any kind will have the same action.

Diet.—Vary diet according to symptoms, but it should generally consist of liquid and farinaceous foods—beef broths and extracts, chicken-broth, baked potatoes, soft-boiled rice, milk, junket, tapioca, corn-starch, sago, boiled fish in moderation, soft-boiled egg.

Medicinal Treatment.—*During the Paroxysm.*—If called immediately before or *during the chill*, administer a hypodermic injection of morphina sulph., gr. $\frac{1}{4}$, and atropina sulph., gr. $\frac{1}{120}$, which will abort or greatly mitigate a chill; put patient in bed; cover him with blankets, and use hot-water

bottles. A full dose of spts. chloroformi, f ̄j, or pilocarpine, gr. $\frac{1}{16}$ to $\frac{1}{4}$, hypodermically, will often answer.

Hot Stage.—Greatest relief is afforded by a cold sponge-bath, cold, acid drinks, or a regular cold bath. Antipyretic drugs are too slow in action.

Sweating Stage.—Cold sponge-baths with cold water and alcohol, or some mild astringent; cold, acid drinks. Atropine, hypodermically, if sweating is profuse. Curative agents are useless during a paroxysm of intermittent fever.

Intermission or Remission.—Induce active catharsis with calomel and salines. Cinchona and its preparations are the accepted remedies, and in order to prove efficacious must be pushed until the full physiological effect is produced, and that at least two hours preceding the anticipated attack. Quinine bisulphate or sulphate, administered by the stomach or per rectum, in doses varying from five to forty grains, beginning four to six hours before the anticipated paroxysm, and continued every one or three hours until its full effects are produced. When a paroxysm is aborted, give small doses of quinine until next day, when it must be increased as before at the time for the paroxysm. Continue this method every two, four, or six days until the twenty-first day is passed, when it is not likely to return unless patient is still exposed to the poison.

Irritability of the stomach is lessened by calomel, gr. $\frac{1}{16}$, every hour; arsenite of copper, gr. $\frac{1}{56}$, every fifteen minutes to half an hour, in solution; small doses of morphina or cocaine.

Hyperpyrexia requires cold baths and not antipyretic drugs.

Headache is relieved by pill acetanilide comp. (form, p. 27), every half-hour.

Congestive and hemorrhagic symptoms require symptomatic treatment as given in other parts of this work.

Convalescence.—Give tonics of iron, quinine, strychnine, arsenic, and cod-liver oil, with good, nourishing diet.

Chronic Malaria.—Change residence to a non-malarious district; keep bowels active every day with cathartics. Quinine is not of much benefit. Arsenic is the best remedy, and should be pushed to the point of tolerance and used for long periods of time. Salts of mercury and iodides are sometimes given with advantage.

Enlarged spleen (ague-cake) is reduced by imunctions of red iodide of mercury and lard, baked in before a hot fire; cold douches over the spleen are beneficial; galvanism is sometimes used.

[*Note.*—Many remedies are recommended in malarial diseases, but none yet mentioned will take the place of quinine, which may be termed *almost* a specific if properly administered. Malaria can never be wholly eradicated from the system as long as patients live in malarial districts.]

ERUPTIVE FEVERS.

VARICELLA.

Synonym.—Chicken-pox.

Definition.—A specific, infectious, eruptive disease, manifesting itself by slight febrile reaction and successive crops of smooth vesicles on all parts of the body, at the end of twenty-four hours, which desiccate rapidly and leave a small scab.

Etiology.—Due to a specific germ, that is communicated by direct contact. Often epidemic. A disease of childhood.

Symptoms.—Slight malaise; low fever; pulse slightly increased; loss of appetite; thirst; constipation. Disease may begin with a rigor, chill, chilly sensations, or a convulsion, followed by a temperature of 103° F. The *eruption*, pri-

marily, is erythematous, and changes in a few hours to a soft papule. At the end of the first twenty-four hours, distinct vesicles, filled with a clear or white serous fluid, appear. When punctured these vesicles collapse. It may come in crops, during several days, on the face, trunk, and extremities. Vesicles sometimes form in the mouth and throat. In three or five days these vesicles rupture spontaneously, and small scabs form and fall off in six to ten days. A few isolated vesicles may become pustular, but this is most common in cases where there is uncleanness. Cicatrices are not the rule, but may follow severe cases. A mild attack may be overlooked by careless parents.

Diagnosis.—May be confounded with *variola* during onset or vesicular stage, but the mild constitutional symptoms, time of eruption, complete collapse of vesicles when punctured, absence of general pustules, and secondary fever serve to characterize varicella.

Prognosis.—Death is extremely rare, and is caused by complications.

Treatment.—It is wise to put the child in bed and isolate him until the disease is past, even though the case is very mild. Administer a mild cathartic, and follow with some mild fever mixture, such as aconite, liquor ammonii acetatis, and simple syrup. Light diet. Watch for complications. If pitting is feared, treat locally as in *variola* (p. 60).

VARIOLA.

Synonym.—Smallpox.

Definition.—An acute, epidemic, specific, eruptive, contagious fever, recognized by the sudden onset of fever and the appearance of a papular rash over all parts of the body on the third day, which becomes vesicular, then pustular, and

finally forms a scab that falls off about the twenty-first day, leaving a pitted cicatrix and always accompanied by secondary fever during the stage of pustulation.

Varieties.—Discrete variola; confluent variola; malignant variola; mitigated variola, or varioloid.

Etiology.—The exciting cause of the disease is undoubtedly a germ, as yet not isolated. *Contagion*, directly or indirectly, is its only means of origin, for the disease never arises *de novo*. Debilitated and unvaccinated persons are most susceptible to it. One attack usually prevents another. Negroes have a peculiar susceptibility to variola. *Incubation* is twelve to fourteen days.

Symptoms.—**Discrete Variola.**—*Onset* is sudden, with a chill or rigor; great pain in the lumbar region, head, arms, and legs; nausea; and fever varying from 102° to 105° F. Tongue is coated; anorexia; constipation; occasional delirium; and full, tense, rapid pulse.

Eruption.—On the *third day*, following onset, *erythematous spots* appear, first on the forehead, face, and neck, and, later, on all parts of the body. On the *fifth day* these spots become *papules*, which feel like shot under the skin. At this period the fever and acute symptoms lessen, or, in some cases, subside entirely. On the *sixth day* the papules become *vesicles* which are depressed in the center (*umbilicated*) and do not collapse when punctured. About the *eighth day* the vesicles become *pustular*, and are soon surrounded with a band of dark-red, swollen skin. On the *eleventh or twelfth day* pus begins to exude from the pustules, and soon forms a hard, inspissated mass or scab which does not fall until the eighteenth or twenty-first day. A red, depressed or pitted cicatrix remains for several weeks or months, and ultimately becomes white.

Secondary fever of a severe type and general aggravation

of all symptoms begin on the eighth day, when the eruption becomes pustular, and continue three to five days. There is a peculiar, indescribable odor present in all cases of variola, most marked during the stage of pustulation.

Confluent Variola is a more severe form, and is characterized by an aggravation of all symptoms, but more especially the eruption, which is so abundant that the vesicles and pustules coalesce in many places, causing intense swelling, pain, fever, and large cicatrices. Mucous membranes are more liable to become involved and complications are greater. Eruption may appear a few hours earlier than in discrete variola.

Malignant Variola, black smallpox, or hemorrhagic variola is recognized by a sudden onset with hyperpyrexia, delirium, convulsions, and slight or very severe and fatal hemorrhages from the mucous membrane of the stomach, nose, lungs, kidneys, or uterus. Eruption appears within twenty-four or forty-eight hours; is very thick and dark in color; whole body is covered with petechiæ. Recovery from malignant variola is rare.

Mitigated Variola, or **Varioloid**, is a mild disease occurring in those persons who have been protected by previous vaccination or second attacks of variola. All symptoms are mild; eruption is scattered and does not generally become pustular; hence secondary fever is rare.

Complications and sequelæ are pneumonia, ptialism, pleurisy, erysipelas, purulent conjunctivitis, keratitis, otitis media, obstinate diarrhœa, pyæmia, abscesses, caries, and paralysis of the bladder, larynx, or extremities.

Pathology.—The exact pathological process of variola is not understood. It is undoubtedly due to a specific germ, which is most active in the vesicles, pustules, and scabs formed. The characteristic lesions of variola begin in the

papillary layer of the skin, and are frequently situated over a hair follicle or glands, which may account in part for umbilication of the vesicles. Each vesicle is subdivided into small compartments (*loculated*) by bands of fiber, and will not collapse when punctured. Fatty degeneration of the liver, heart, and kidneys is found post-mortem.

Diagnosis.—*Measles*, *acute syphilis*, and *varicella* may be mistaken for variola in the onset, but the characteristic symptoms of the latter, already described, and the presence of an epidemic will serve to differentiate.

Prognosis.—*Discrete variola* usually terminates in recovery. *Confluent variola* is fatal in nearly fifty percent. of the cases. *Malignant variola* is almost invariably fatal. *Varioloid* rarely causes death, and is short in duration. Unfavorable signs are hyperpyrexia, wild delirium, high secondary fever, multiple abscesses, pneumonia, or any grave complication.

Treatment.—*Prophylaxis.*—Isolation must be enforced, and the most stringent restrictions adopted to prevent spread of the disease (see p. 21). Vaccination is probably the safest prophylactic measure.

Vaccination consists in inoculating the body with virus taken from the vesicle of a cow suffering with cowpox, or from the scab or virus taken from the vesicle of a healthy person who has been vaccinated. The best method of inoculation consists in scraping away the upper layer of the skin on the arm or leg, rubbing in the moistened virus, and allowing it to dry. If it is successfully inoculated it begins to grow red, and, on the third day, a small vesicle forms at the point of inoculation, which becomes umbilicated or depressed on the sixth day. About this time there is some fever, restlessness, anorexia, and a general sick feeling in most cases. About the eighth day the vesicle becomes a pustule, surrounded with a distinct, pink or red areola; the arm some-

times swells to enormous size, and is very painful. From the tenth to the twelfth day the pustule begins to dry, and by the fourteenth day a hard, brown scab is formed, which falls off on the twenty-first or twenty-third day, leaving a distinct cicatrix which persists for life. Vaccination is often accompanied or followed by a papular eruption, which will soon disappear and need cause no alarm. Persons who are vaccinated are afforded immunity from true smallpox, and when it is contracted it is usually varioloid and rarely fatal. This is not an absolute preventive, for true variola may occur in those who have been vaccinated previously.

The patient should be kept in bed in a dark, well-ventilated room. No known remedy seems to shorten or mitigate the course of variola. Begin treatment by the administration of a free calomel purge. Full doses of salicylate of soda, gr. v-xv, every two hours, will relieve pains and fever during the onset. Hypodermics of morphina must be given in extreme pain. Salol, gr. ij-v, or sulphocarbolate of zinc, gr. j-v, every four hours, is frequently given during the whole course of the disease with benefit.

Insomnia is met by full doses of chloral or the bromides.

Hyperpyrexia requires the cold bath, to be followed by a mild fever mixture, pill acetanilide comp. (form, p. 27), or any other desirable antipyretic. Three or four sponge-baths should be given during the day, with a cold antiseptic solution of acid bichloride of mercury. Watch the heart, and begin to stimulate freely whenever it shows signs of weakness. Tonics of iron, quinine, strychnine, and arsenic. Full doses of cocaine are said to prevent the violent form of eruption, confluence, and pitting: this is questionable.

Diet should be bland, nutritious, and liquid, and must be given at intervals of three or four hours. Milk, bovine, scraped beef, soft-boiled egg, animal-broths, oyster-broths,

and beef-extracts. Water should be given in small amounts at frequent intervals; cracked ice is permissible *ad libitum*.

Sore throat requires astringent, antiseptic washes and gargles. Peroxide of hydrogen, glycerine, and water.

Diarrhœa is usually controlled by salol or sulphocarbolate of zinc, but may require more astringent medication.

Open large abscesses, and treat antiseptically without poultices. To avoid disfigurement and pitting, the room must be kept dark and the exposed parts covered with some antiseptic unguent, powder, or wash. My own preference is given to the constant application of a cold antiseptic solution of acid bichloride of mercury, one to five or ten thousand, or peroxide of hydrogen, one to four, exercising care to keep the parts thoroughly cleansed and the cotton dressing changed frequently. Collodion, carbolic acid, ung. zinci oxidi, and boric acid are recommended as local applications to prevent pitting.

SCARLATINA.

Synonym.—Seralet fever.

Definition.—An acute, specific, contagious, self-limited, self-protective disease of childhood, manifesting itself by a sudden onset with a chill, rigors, convulsions, or vomiting, followed by high fever, sore throat, and the appearance of a bright-scarlet, uniform rash over the whole body, at the end of the first twenty-four or thirty hours, gradual defervescence, and desquamation of the epithelial layer of the skin at the end of the seventh or tenth day.

Varieties.—Scarlatina simplex; scarlatina anginosa; scarlatina maligna.

Etiology.—Due to a very active, specific germ, not yet isolated. It is the most contagious of children's diseases, and can be carried to any distance by books, letters, clothing, and

careless persons. One epidemic in England was caused by milk from one cow where the disease existed. The vitality of the germ is not lessened by age, for cases originate from toys, books, and clothing that have been used by infected persons years before. Most common among children. Very young infants and adults are not so susceptible; women who have recently been confined show a peculiar susceptibility to it. *Period of incubation* is about one week.

Symptoms.—Scarlatina simplex.—Patient may be peevish, cross, restless, and complains of slight sore throat and headache for a few days before the onset. *Invasion is sudden*, with a chill or rigor, intense headache, nausea or vomiting; a temperature of 103° to 105° F.; rapid pulse and quickened respiration; skin is dry and hot. Throat is sore, dry, and red; tongue is coated, red at the tip and edges, and papillae prominent.

In twenty-four or thirty hours after the onset a *scarlet eruption* appears on the face and neck, and spreads rapidly in a few hours to the whole body. This eruption consists of minute points, with a distinct areola around each point, which coalesce and form a uniform redness with no intervening healthy skin. Parts of the body may be entirely free from the eruption. On the fourth day following the onset the rash begins to fade, and on the seventh or tenth day *desquamation* begins. The skin is first scaly or rough in appearance, and soon large flakes or pieces of epidermis can be peeled off—especially so on the hands and feet. Desquamation continues until the fifth or sixth week after onset.

Soreness of the throat and tongue is most severe after the third day; *tongue* presents a strawberry appearance, and is often fissured and dry; lips crack, and are covered with a thick, hardened sordes and epithelium; *temperature* remains high, 103° to 107° F., for three days; delirium is a common

symptom. Diarrhoea may supervene. As the rash fades, the temperature and all symptoms subside by lysis.

Scarlatina anginosa pursues the same course as the simple form, except that the throat symptoms are greatly aggravated. Throat is very sore, ulcerated in patches, and covered with a thick, offensive, tenacious, yellow or white exudation. Cervical glands and tonsils are swollen, and abscesses often form in them. Deglutition and breathing are quite difficult. Inflammation not infrequently spreads to the middle ear, producing a suppurative otitis media with permanent loss of hearing. The Schneiderian mucous membrane, conjunctivæ, and cornea are often involved through extension of the inflammation by continuity of structure.

Scarlatina maligna is a fatal form of the disease. *Onset* is violent and sudden, with convulsions, great prostration, a purple, petechial eruption, hyperpyrexia, and death in one to four days.

Complications.—*Acute tubular nephritis* is the most common complication, and may occur at any stage of the disease. Urine is smoky; contains albumin, red blood-cells, and tube-casts. It is liable to assume a chronic form with dropsy.

Latent tuberculosis is often brought into activity by an attack of scarlatina.

Endocarditis and rheumatism often accompany or follow scarlatina.

Diagnosis.—Must be distinguished from morbilli, rötheln, and variola. Typical cases are so distinctive that mistakes in diagnosis are inexcusable. Care must be taken not to confound scarlatina anginosa with true diphtheria.

Prognosis.—A positive prognosis is impossible, as mild cases often assume the worst forms. Mild, uncomplicated cases usually recover promptly. Always caution parents of

possible sequelæ and complications. Puerperal cases are mostly fatal.

Treatment.—Isolation and prophylactic treatment as given on page 21. It is questionable whether any known remedy will limit the course of scarlatina. Objectionable symptoms and complications can be greatly mitigated. Begin treatment with a good cathartic. Triturates of calomel, gr. $\frac{1}{10}$, every half-hour, will relieve nausea and vomiting and produce cathartic action. Follow this with:

℞
 Infus. digitalis..... f℥ iij.
 Liq. ammonii acetatis..... f℥ ss.
 Syr. aurantii floratis..... q. s. ad. f℥ iv.

M. Signa. One teaspoonful every three hours.

Digitalis must be pushed to its full extent to produce good results. It is diuretic, a heart-tonic, lessens fever, and aids in preventing complications. In addition to this, give the following to reduce fever and favor the appearance of the eruption:

℞
 Tr. aconiti radicis.
 Tr. belladonnæ.....aa. gtt. xxx.
 Tr. rhois toxicodendron..... gtt. x.
 Aquæ.....q. s. ad. f℥ iv.

M. Signa. One teaspoonful every hour until the rash has properly appeared, then every two or three hours.

If the temperature remains above 103° F., give cold sponge-baths at intervals of two or four hours in preference to anti-pyretics. For the sore mouth and throat, use a wash of chlorate of potash and boric acid; or a very desirable combination is:

R

Hydrogen peroxide. (15-volume sol.) f $\bar{\text{z}}$ ij.
 Sol. cocainæ hydrochloratis . . . (4 %) gtt. x.
 Mel. despumati vel mel. rosæ f $\bar{\text{z}}$ ss.
 Aquæ q. s. ad. f $\bar{\text{z}}$ iv.

M. Signa. Use freely as a mouth-wash, gargle, or spray.
 If too strong, dilute with pure water.

When the tongue is dry and parched, apply borax and glycerin several times daily with a soft brush. For the dry condition of the lips apply tallow, $\bar{\text{z}}$ j, and spts. camphoræ, gtt. x. Ice and carbonated waters for thirst.

During *exfoliation* use some good antiseptic ointment or wash. Bathe several times daily with a good antiseptic wash. Follow, during convalescence, with tonics of iron and strychnine. Meet complications as they arise.

Diet should be light, nutritious, and unseasoned. Milk, butter-milk, vegetable and animal broths, rice, tapioca, sago, and small amounts of game and fish. Orange-juice may be used freely at all periods.

MORBILLI.

Synonym.—Measles.

Definition.—An acute, contagious, self-protective, self-limited, epidemic fever of childhood, recognized by sudden onset, marked catarrhal symptoms of the eyes and respiratory tract, and the appearance of a diffuse rash on the fourth day.

Etiology.—A disease of childhood, but may occur in the adult. Young children are not very susceptible. Always caused by direct or indirect exposure to some previous case. The germs of morbilli are often carried by physicians, nurses, and visitors to other children. There seems to be no special

predisposition on the part of delicate children. It is most contagious during the catarrhal stage and period of desquamation. *Period of incubation* is about ten days.

Symptoms.—Child is restless, peevish, flushed in the face, nauseated, and has little appetite. A chill, rigor, convulsion, or chilly sensations herald the onset. Temperature is 102° to 104° F.; *eyes* are red, swollen, and have a suffused, liquid appearance; *photophobia*; *catarrh of the nasal mucous membrane*, with profuse, watery and irritating discharge; tongue is covered with a white fur; pharynx is red and congested; a very annoying, dry, hacking cough. Diarrhœa may occur. On the second or third day the temperature may fall to normal, but rises suddenly at the end of the third day or the beginning of the fourth.

Eruption, on the fourth day, appears on the forehead and neck, and gradually spreads to all parts of the body. It consists of slightly raised, crescentic, and irregular erythematous red spots, with healthy skin intervening. It begins to fade in three days, assuming a brown, a pale-yellow, and then a light color, and disappears from the face first. All symptoms begin to subside when the rash reaches its height, and by the ninth day disappear. Rash is followed by a *desquamation* of fine, bran-like scales, accompanied by mild or intense itching of the skin.

Varieties.—*Malignant*, hemorrhagic, or black measles begins suddenly with great aggravation of all symptoms and hyperpyrexia. The rash becomes petechial, hemorrhagic, and of a dark-purple or black color. Hæmoptysis is common. These cases are usually fatal.

Morbilli sine catarrho vel sine eruptione—measles without catarrh or eruption—is very doubtful, although such cases are described.

Complications and Sequelæ.—Conjunctivitis; ophthalmia;

otitis media; chronic nasal catarrh; chronic laryngitis; acute catarrhal pneumonia; tuberculosis; noma; parotitis; stomatitis; hypertrophy of the tonsils; and general debility.

Pathology.—No distinct pathological process has been discovered, but the disease is undoubtedly dependent on a germ for its activity.

Diagnosis.—No disease should be mistaken for morbilli after the characteristic eruption occurs on the fourth day. *Scarlatina* is ushered in by a very high fever, no catarrhal symptoms about the eyes and nose, and the appearance of a uniform scarlet rash at the end of twenty-four hours.

Morbilli in the colored race is diagnosed by the catarrhal symptoms, time of the eruption, and the appearance of patches of irregular, crescentic form, not red, but of a coppery color, and much different from the natural black skin.

Prognosis.—Uncomplicated cases recover promptly. Malignant cases terminate fatally. Latent tuberculosis may be brought into activity by an attack.

Treatment.—Specific medication is entirely out of the question, as nothing appears to limit its course. The main treatment lies in regulating hygiene and diet, preventing complications, and relieving objectionable symptoms. Keep the room dark to prevent eye-complications. The following combination relieves cough, lessens fever, and prevents tendency to congestions:

R

Tr. aconiti radiceis.

Tr. rhois toxicodendron.

Tr. belladonnæaa. gtt. viij.

Morphinæ sulphatis..... gr. j.

Aquæq. s. ad. f ʒ iv.

M. Signa. One teaspoonful every two or three hours as needed.

Bathe frequently with some cold or tepid antiseptic solution. During desquamation, use an unguent or antiseptic wash to relieve itching and prevent spread of the scales.

Malignant morbilli must be treated symptomatically, and free use made of cold baths and stimulants. In all cases keep up a free action of the bowels. Check *diarrhœa* with appropriate remedies. In marked *nervous symptoms* or *convulsions* immerse the child's body to the neck in hot water, and apply ice to its head. Continue this for any length of time necessary to give relief. Best diet and tonics during convalescence. If the eyes are greatly affected, use an eye-wash of boric acid, gr. x, in water, $\bar{3}$ j, frequently.

RÖTHELN.

Synonyms.—Rubeola; roseola; rubella; false measles; German measles; French measles.

Definition.—An acute, contagious, epidemic, eruptive, self-limited fever, recognized by sudden onset with a chill or slight catarrhal symptoms, and the appearance of an irregular discrete eruption, from the first to the third day, similar to morbilli.

Etiology.—Is certainly caused by a distinct germ, not yet isolated. Contagious. Rötheln is not a hybrid variety of morbilli and scarlatina. Adults are frequently affected by it. *Period of incubation* is about ten days.

Symptoms.—Prodromal symptoms are usually absent. *Onset* is marked by a rigor, chill, convulsion, or chilly sensations, nausea and vomiting. Throat is slightly sore; eyes are red; lachrymation is profuse; coryza and sneezing. The cervical lymphatic glands are swollen and tender; slight or severe cough; headache. Fever is very slight or entirely absent.

Eruption appears on the first, second, or third day on the face, neck, and chest, gradually spreading to other parts of the body, and lasting about two or three days. Eruption is composed of numerous very small, rose-colored or pink, round or oval spots, distinctly isolated, and rarely coalescing to form crescentic patches. It is slightly elevated, very itchy, and, when it subsides, fine scales desquamate. The eruption may fade away and reappear again without harm. Complications are not common, pneumonia and nephritis being the principal ones.

Diagnosis.—*Morbilli* has severe catarrh, higher fever, appearance of a crescentic rash on the fourth day, longer in duration, more severe sequelæ, and extensive desquamation.

Scarlatina has very high fever, absence of catarrhal symptoms, a confluent scarlet rash, desquamation in large patches, severe sequelæ, and great prostration.

Prognosis.—Most cases recover in one week or ten days.

Treatment.—Pursue the same general symptomatic treatment as in morbilli.

DENGUE.

Synonyms.—Break-bone fever; dandy fever.

Description.—It is a disease of tropical and hot climates, whose distinct cause is unknown. Some authors claim it to be of the malarial type, but this is very doubtful. It is an acute, infectious, epidemic disease, whose *period of incubation* varies from three to six days. *Onset* is sudden, with severe pains in one or more of the joints and back; a severe, boring pain in the shafts of the long bones, shifting from one part of the body to another; high fever; headache; nausea; stiffness of the muscles; and severe pains in the eyes. Sometimes a uniform *red rash* appears with the primary fever, and sub-

sides in one or two days with the fever, by lysis or crisis, leaving the patient weak, anxious, or exhausted. In two or three days fever returns as before, and a *diffuse red rash similar to scarlatina* appears on the face, neck, and hands, and spreads to the whole body. It often resembles the eruption of urticaria, and is very itchy. Fever subsides, pains disappear about the eighth day, and desquamation of the skin ensues. Relapses are of frequent occurrence; some cases pursue a chronic course for months or years, leaving the joints deformed or ankylosed. It is rarely fatal except in very young or old people, or persons suffering with old chronic diseases.

It is differentiated from *acute rheumatism* and *scarlatina* by its short duration, relapses, character of the eruption, and the epidemics.

Treatment.—Stimulate the emunctories by a free purge, free diaphoresis, and diuresis. For the pains, give full doses of the salicylates, salol, acetanilide, phenacetin, or pill acetanilide comp. (form, p. 27). Avoid opium unless absolutely necessary. Antiseptic, carbolated washes or unguents to the skin to relieve pruritis. Frequent cold baths; good, stimulating diet; and, during convalescence, massage and inunctions of hot olive-oil or lard, two or three times daily, around the affected joints.

ERYSIPELAS.

Synonyms.—St. Anthony's fire; the rose.

Definition.—An acute, contagious, specific, eruptive fever, manifesting itself by sudden onset with a chill, high fever, and local or diffuse inflammation of the skin and subcutaneous tissue of the face or other parts of the body.

Etiology.—It is caused by the entrance of the *Micrococcus erysipclatis* into the blood or lymphatics through some abrasion of the skin, be it a slight scratch or a severe surgical wound. *Medical and surgical erysipelas* are one and the same disease, due to the same cause; the latter occurring after surgical operations, and is more extensive. It is *contagious*, and often becomes *epidemic* in surgical and obstetrical wards. Very young and old people are most susceptible to its influence. Those who are debilitated by chronic or acute diseases, those subject to exposure to severe cold, bad hygiene and diet, are most susceptible. The face is most commonly affected. *Period of incubation* varies from three to seven days.

Symptoms.—*Onset.*—There may be a feeling of uneasiness or general malaise for one or two days, followed by a rigor or chill, high fever, headache, nausea, anorexia, and, possibly, diarrhœa. A few hours later there is a stinging, burning, or itching sensation at one spot on the face, nose, or ear, at the point of inoculation. On examination this spot is red, swollen, and tender. A small vesicle or papule forms. Inflammation soon spreads to the whole face and scalp; skin is swollen, red, tense, hot, shiny, and covered with small vesicles. It is much darker red in the central area, and shades off in color to a distinct line of demarkation between the affected and healthy skin. Pain, burning, itching, and throbbing are very severe at times; glands of the neck are swollen; throat is sore; and general depression is marked. In five to seven days inflammation and severe symptoms begin to subside, and exfoliation of the epidermis ensues on the affected area. Small or large abscesses not infrequently form. Temporary albuminuria may be present.

Phlegmonous Erysipelas is a more severe type of the simple variety, and is accompanied by more severe constitutional

symptoms, delirium, and coma. Multiple or single abscesses form in the cellular tissue, and the local manifestations are more severe, although confined to a limited area. Death is caused by general depression, exhaustion, pyæmia, œdema of larynx and pharynx, or meningitis.

Pathology.—The primary lesion in every case is some abrasion of the skin through which the *Micrococcus erysipclatis* gains entrance. The germ grows, reproduces itself, and forms ptomaines which act as a local irritant, causing inflammation. As a result of the irritation and inflammation, small vesicles form; swelling results, together with redness and pain. The virus travels through the lymphatics to the subcellular tissues and lymphatic glands, where it is checked. Ptomaines are carried into the general circulation and produce constitutional symptoms. Abscesses are due to a *mixed microbic infection*—that is, the introduction of pyogenic germs in addition to the germs of erysipelas.

Diagnosis.—Easily distinguished from all other affections by sudden onset, fever, local inflammation with a shiny, tense skin covered with small vesicles, a distinct line of demarkation, and possibility of contagion.

Prognosis.—*Simple erysipelas* is rarely fatal. *Phlegmonous erysipelas* requires a guarded prognosis, and is very fatal. *Puerperal erysipelas* usually terminates in death.

Treatment.—*Local Measures.*—The disease being due to a germ, local applications should be antiseptic and non-irritating. Poultices should be avoided, as they favor suppuration. Make constant applications of acid bichloride of mercury (1 to 3000) and never allow the parts to become dry. Peroxide of hydrogen acts admirably if applied constantly, either in its purity or diluted. A one-percent. solution of fuchsin, painted over the parts, forms a coating impervious to gases and liquids. Cures are reported from a few applications. Open vesicles as

they form, and pursue most scrupulous cleanliness and antiseptis. Applications of iodine, solutions of iron, nitrate of silver, and others act as local antiseptics, but are objectionable on account of discoloration of the skin. If seen early, when it amounts to a mere point or very small area, multiple incisions around the outer zone of demarkation, made sufficiently deep to sever the lymphatic vessels leading from the part, and local antiseptis often cut it short. Open abscesses freely, and treat antiseptically without poultices.

Constitutional Measures.—Administer a saline cathartic, and see that it acts freely. Establish diaphoresis with fluid extract of jaborandi, gtt. xx, every two to four hours, administered with hot drinks. The jaborandi treatment is claimed to cut every case short if continued several days. Pilocarpine, gr. $\frac{1}{8}$, hypodermically. Tonics of iron and quinine, every four hours, aid materially in curing the affection. Give most nutritious, stimulating diet, and insist on rest in bed. Antipyretic measures are unnecessary except in high fever, in which case use cold baths. Use every measure to prevent contagion, and do not attend cases of confinement at the same time you are treating erysipelas.

GENERAL INFECTIOUS AND CONTAGIOUS DISEASES.

CHOLERA.

Synonyms.—Asiatic cholera; epidemic cholera; sporadic cholera.

Definition.—An acute, specific, epidemic or endemic, infectious, malignant disease, recognized by sudden onset, profuse vomiting, severe cramps, rice-water stools, collapse, and death in a few hours or days.

Etiology.—The direct cause of the disease seems to be the *Spirillum cholerae* or *comma bacillus* of Koch, which is an aërobic germ and is carried by drinking-water, milk, food, and the stools of the patient. Decaying vegetable matter, intense heat of a dry season, bad hygiene, over-crowding, summer complaints, and carelessness predispose to its development. Although hot weather favors its development, some of the worst epidemics have occurred in Russia in midwinter. The germs may be carried in rags, merchandise, and letters. It is not self-protective. *Period of incubation* varies from two to seven days.

Symptoms.—Cholera is usually preceded for a few hours or days by a feeling of lassitude, uneasiness, slight headache, lack of appetite, occasional dizziness, slight diarrhœa, and weakness. There is a distinct chill or chilly sensations, accompanied by epigastric and abdominal pain, nausea, coated tongue, bad taste in the mouth, and profuse diarrhœa. At

first the *diarrhœa* contains fecal matter, but it changes in quality to an opaque, copious, or colorless fluid which is passed every few minutes or seconds. These so-called *rice-water stools* are alkaline in reaction, have a specific gravity of about 1009, contain albumin, and deposit a fine mass of leucocytes, mucus, epithelium, shreds of tissue, salts, and bacteria. These passages are accompanied by gurgling and rumbling sounds, but with little tenesmus or pain. Blood may be mixed with them.

Vomiting is slight, but soon becomes obstinate, and consists of clear "rice-water" fluid. Little effort is required in vomiting. The *tongue* is dry and covered with a heavy white coating. *Severe cramps* of the legs, feet, hands, and body accompany the latter stage of vomiting and purging. *Urine* is scanty or suppressed and contains albumin. Pulse is rapid and there is slight fever.

Collapse (Algid Stage).—At any period from one hour to several days after the onset the temperature in the mouth and axilla falls from 89° to 80° F.; the skin is cold; breath feels cold; respiration is rapid and shallow; great restlessness; diminution or loss of voice; continued vomiting; eyes sunken and hollow; general wasted appearance; purging may cease, and the mind remains perfectly clear. Vaginal or rectal temperature may be 103° F., during collapse, while that of the mouth and axilla may be 90° F., or lower. Collapse may last from six to twenty-four hours, when death comes or reaction sets in.

Reaction.—Temperature begins to rise, and may reach 105° F.; pulse strengthens; vomiting and purging cease; skin begins to get warm, and assumes a more natural appearance; *urine* is increased in amount, and may show albumin and casts; may be a rash of erythema or urticaria on the trunk, arms, and legs, which lasts for several days. Rapid recovery

or slow convalescence with a typhoid condition for several weeks. *Complications* may occur at this time—bed-sores, pneumonia, parotitis, and abscesses.

Pathology.—The weight of medical testimony points to the *comma bacillus of Koch* as the true cause. It develops in the gastro-intestinal canal, and produces the various symptoms by a process which is unknown. *Rigor mortis* persists for a much longer time than usual. Decomposition is delayed. Lungs and serous membranes are congested and red. Intestines are congested and swollen. Peyer's glands are prominent, and contain an opaque fluid. All glands in the intestines are enlarged, and the tissues relaxed. In prolonged cases the mucous membrane of the bowel is eroded and ulcerated. Kidneys are enlarged as in acute Bright's disease. Spleen is diminished in size.

Diagnosis.—*Choleric* consists of a choleraic diarrhoea or the symptoms of the onset of true cholera; absence of intense muscular cramps and collapse; short in duration; absence of albuminuria and uræmic symptoms.

Arsenical poisoning is distinguished by the history; short duration; presence of arsenic in dejecta; not epidemic, and absence of comma bacillus of Koch.

Prognosis.—True Asiatic cholera is mostly fatal within six hours to seven days. Epidemics vary in mortality and severity. Convalescence is prolonged and tedious.

Treatment.—*Prophylaxis.*—During an epidemic use nothing but thoroughly sterilized water, milk, and food. Light wines may be used, but not the stronger alcoholics. Excesses of all kinds must be avoided. Bowels should be kept active by mild salines if necessary. Daily exercise in the open air. Close confinement must be avoided. A daily, cold sponge-bath before retiring is beneficial. Every case of diarrhoea, even if mild, must be treated at once by mild liquid and

farinaceous diet, and intestinal antiseptics every two to four hours. (Sulphocarbolate of zinc, gr. iij; salol, gr. iij; betanaphthol; salicylate of bismuth.) If there is purging use copious injections of warm water containing an astringent. Thoroughly disinfect all stools, isolate patient and attendants (see p. 21).

Active Treatment.—*Never resort to the use of morphia or opium hypodermically or by the mouth, except as a last resort to relieve intense pain.* Camphor gives best results and is used in the form of a wine.

R

Pulv. camphoræ..... gr. lxxv.

Alcoholis..... q. s.

Vini rubri..... Oj.

M. Signa. One small wineglassful, to an adult, every hour.

This often limits vomiting, diarrhoea, and cramps, and produces diuresis.

Salol or sulphocarbolate of zinc, gr. v—x, every hour, are the best remedies, and should be pushed to their full extent. Dilute sulphuric and hydrochloric acid should be used in the water that is given.

Enteroclysis or thorough washing out of the bowel. Use a fountain syringe, without much pressure, and inject two to four quarts of water (100° to 105° F.) to which have been added tannic acid, ʒij, and wine of opium, fʒij to Oij. If possible make the injection, which should always be given in the recumbent position, pass the ilio-caecal valve. Repeat the process hourly, or keep up a constant flow if necessary. The use of antiseptics in enteroclysis is objectionable on account of toxic symptoms.

When the skin becomes inactive and cold, and collapse is threatened, rub the body for a few minutes with a rough towel

and cold water, and follow at once with a hot bath (118° F.) for ten or thirty minutes, using the camphor-wine and other stimulants as indicated. Intravenous injections of a normal aseptic, saline solution (seven parts to one thousand, at 102° F.), or hypodermic injections of saline solution into the subcutaneous tissues (*hypodermoclysis*). Harkins recommends the "application of *blistering fluid behind the ear* and along the course of the pneumogastric nerve as far as the angle of the jaw." It has been shown to stop purging and other characteristic symptoms and tide the patient over the worst stage of the disease, cure or abort it. As soon as stomach and bowels react, administer concentrated, predigested meat juices and milk at intervals of three or four hours.

DIPHTHERIA.

Synonyms.—Malignant sore throat; membranous angina; putrid sore throat; synache maligna.

Definition.—An acute, systemic, specific, contagious, epidemic or endemic disease, recognized by constitutional symptoms, albuminuria, and the presence of a tough, ashy or grayish-white false membrane on the mucous membrane of the fauces and throat, and terminating with characteristic sequelæ.

Etiology.—Caused by a germ whose identity is not positively demonstrated. Most common among children from the second to the tenth year, but may occur in adults. A disease of cold weather, and is epidemic. Directly contagious from saliva, breath of patient, or from soiled clothing. Filth, made ground, bad hygiene, and crowding favor its development. The germs may be conveyed in water, milk, food, or ice. Cats and pet animals frequently carry it. *Period of incubation* varies from two to six days.

Symptoms.—*Onset* may be gradual, with loss of appetite, headache, muscular soreness, slight fever, and to all appearances an ordinary sore throat. It may begin suddenly with a chill, chilly sensations, headache, backache, rise of temperature to 102° F., enlarged cervical glands, sore throat, painful deglutition, great prostration, and coated tongue. During the first few hours or days the throat is red, congested, and swollen, and shows one or more white points on the tonsil, fauces, or palate. These spots may enlarge rapidly, and cover half of the throat in twelve or twenty-four hours, or spread slowly. This exudation or *false membrane* is an ashy or grayish-white; quite thick and tenacious; is hard to detach; leaves small bleeding points and soon reforms. In one or two days the throat begins to ulcerate; breath is very offensive; bits of the membrane are coughed and spit up. A part or the whole of the throat may be involved.

Lymphatic glands, at the angle of the jaw, enlarge and are very tender; *temperature* rises to 104° to 105° F.; pulse is weak, and prostration marked. *Urine* is scanty, high-colored, and contains albumin and casts. The membrane may extend to the nasal cavity (*nasal diphtheria*), and is recognized by an excoriating discharge, occlusion of the nose, epistaxis, great fetor, and frontal headache. It may extend to the larynx (*membranous laryngitis*; *membranous croup*), and is recognized by hoarseness, loss of voice, and croupy symptoms. May extend to bronchi; Eustachian tube to the middle ear; through the lachrymal duct or forward into the mouth. Scratches, blisters, and sores on the patient soon become covered with a frosty, ashy-white exudation, and ulcerate freely. Lymphatic glands may suppurate.

Resolution may begin on the third to seventh day; the membrane gradually disappears; fever and headache lessen, and patient convalesces very slowly. Relapses are frequent. *En-*

docarditis may develop. Sudden death from cardiac embolism, paralysis of the heart-muscle, or asphyxia. *Diphtheritic paralysis*, temporary or permanent, always follows typical cases, and may affect the muscles of deglutition, with inability to swallow and regurgitation of the food; loss of voice, with strabismus; hemiplegia or paraplegia; paralysis of the bladder; and local anæsthesia. Duration of diphtheria is two to three weeks.

Pathology.—Diphtheria is caused by a germ which seems to flourish best in the mucous and submucous membranes of the throat, nose, and bronchi. The false membrane is composed of mucus, epithelium, leucocytes, new fibrous tissue, pus-corpuseles, micrococci, and bacilli. It is tough, tenacious, ashy-white in color, when detached leaves bleeding points, and soon reforms. This membrane grows in successive layers, and spreads from one or more focal points to the pharynx, larynx, lungs, mouth, ears, eyes, or nose. The submucous tissue is infiltrated with leucocytes and germs. Absorption of ptomaines produces all constitutional symptoms. Diphtheritic endocarditis is due to the introduction of the germs into the circulation. Paralysis is probably due to multiple neuritis. The enlarged glands show bacteria and inflammatory changes. Heart and kidneys are more or less degenerated. *Albuminuria* is always present in typical cases.

Diagnosis.—*Scarlatina* is abrupt in onset, with very high fever, sore throat, no tough membrane in the throat, and the appearance of the characteristic eruption in twenty-four hours.

Follicular tonsillitis is recognized by small yellow plugs, filling the follicles of one or both tonsils, which do not spread to the palate and mucous membrane; different course, duration, and sequelæ; few constitutional symptoms, and no general glandular enlargement.

Prognosis.—Must always be guarded, as most favorable indications are often replaced by severe and fatal symptoms.

Always advise patients and parents of possible endocarditis, cardiac paralysis, Bright's disease, or local paralysis. Laryngeal and nasal diphtheria are very unfavorable.

Treatment.—*Isolation* is imperative. Rest in bed from the onset until all traces of the disease disappear. *Avoid all depressants*, and give nothing but stimulating and tonic treatment.

Dietary Treatment.—Nourishment must be given at regular intervals of four hours, day and night, regardless of sleep. *Milk is the best diet.* With it you may give beef-extracts and beef-juices, brandy, or an egg. Administer brandy (gtt. x–lx) each time milk is given, if there is much prostration. Scraped beef, in small amounts; boiled rice, tapioca, and sago; light puddings; wine-whey, wine-jelly, chicken-jelly, baked potato, soft-boiled egg, and juice of oranges. *Avoid all heavy, indigestible diet.* Rectal alimentation may be necessary.

Internal Medication.—Hydrargyrum chloridum corros., gr. $\frac{1}{60}$ to $\frac{3}{60}$, and tr. ferri chloridi, gtt. x–xx, every three to six hours, pushed to a point short of mercurialism. Infusion of digitalis may be given at four-hour intervals for its stimulating and diuretic effects. Potassii chloras, gr. j–v, every three or four hours, with tr. ferri chloridi, is an old method, but rather depressing, irritating to the stomach and kidneys, and unsatisfactory in many cases. Hydrargyri iodidum rubrum, gr. $\frac{1}{60}$ to $\frac{1}{60}$, every two to four hours, is recommended. Salol, quinine, turpentine, acetanilide, phenacetin, and many other drugs are recommended. Keep the bowels active with salines. Stimulate freely. Fever must be met with local cleanliness of the throat and cold sponge-baths. *Avoid depressing antipyretics.* Paralysis demands tonics of strychnine, iron, arsenic; massage and galvanism to the affected parts. In diarrhoea give calomel, gr. $\frac{1}{20}$ to $\frac{1}{10}$, every two hours for twelve hours, and if not checked give sulphocarbolate of zinc or salol every two hours.

Local Medication.—The nose and throat must be kept thoroughly clean, and local applications made at regular intervals, night and day.

R

Hydrogen peroxide..(15 to 20 volume). f̄ij.

Glycerini f̄j.

Aquæ.....q. s. ad. f̄vj.

M. Signa. Use locally as a gargle, application, or spray, every half-hour, until the growth of the membrane is checked, then continue at hourly intervals as necessary. If too strong dilute with one part of water.

Unless gargling, mopping, or spraying is done thoroughly and regularly, good results are impossible. Solutions of lactic acid, papoid, pepsin, pancreatin, trypsin, carbolic acid, iodine, chlorate of potash, and iron, find their advocates. Ulcers may be touched with a solution of nitrate of silver, gr. x-̄j, and covered with aristol and boric acid. *Avoid caustic applications to the whole throat.* Treat *nasal diphtheria* by injections and douches of alkalies, and follow with peroxide treatment. Enlarged and inflamed cervical glands are best reduced by a ten to twenty percent., ointment of ichthyol, applied thoroughly, every four to six hours, followed by the application of dry heat. *Laryngeal diphtheria* is treated as membranous croup. Inhalations of hot steam, impregnated with eucalyptol, turpentine, or menthol, are desirable and soothing to the throat.

PERTUSSIS.

Synonyms.—Whooping-cough or hooping-cough.

Definition.—An acute or subacute, self-protective, contagious, epidemic disease of childhood, recognized by irregular

paroxysms of spasmodic, convulsive coughs, followed by crowing inspiration or a whoop.

Etiology.—It seems to be caused by some microörganism whose identity is unknown. A disease of children under ten years, but may occur in adults. Contagious and epidemic. Most common in the fall and spring. *Period of incubation* varies from two to fourteen days.

Symptoms.—*Onset* is that of an acute cold, with suffused eyes, coryza, slight cough, temperature 99° to 100° F., pulse rapid, restlessness, and anorexia. Cough increases, is dry and hacking, unsatisfactory, and worse at night. Frequent sneezing; tickling and burning in the throat. Thus it continues seven or eight days, when it assumes a characteristic phase known as whooping.

Without warning, the child suddenly runs to its mother or tightly grasps some near article, gives one or two short spasmodic coughs, and then ten to twenty expiratory coughs in succession, without inspiration, followed by a long-drawn crowing inspiration or whoop, and several barking coughs. During a paroxysm the face is dusky, eyes prominent and congested, and veins of face and neck prominent. Vomiting not infrequently follows the paroxysm. Hemorrhage from the nose, mouth, bronchi, or into the skin, may accompany or follow violent paroxysms. Paroxysms vary in number from two to fifty in twenty-four hours, and the child seems almost well in the intervals. This stage may last three weeks to six months, and subsides by lysis, leaving nervous sequelæ, disordered digestion, tuberculosis, anæmia, and general debility. *Complications* are bronchitis, catarrhal pneumonia, emphysema, atelectasis pulmonum, severe hemorrhages, vomiting, and sublingual ulceration.

Pathology.—Analogy would show that whooping-cough was due to a microörganism, but none has been isolated.

The neurotic element enters into it largely, and the paroxysms are probably caused by an irritation of the vagus nerve. The tracheal and bronchial glands are enlarged. Very little of the true pathology is known.

Prognosis.—Death from the disease itself is rare, but may be caused by hemorrhage or any of the complications. Its average duration is six weeks, but may continue three or six months.

Treatment.—It is rarely necessary to put the child in bed, but it should be protected from exposure to cold and wet. *Isolate* the child as much as possible. *Bromoform* forms the basis of my treatment, and is followed by the very best results.

R

Bromoformi	m xvj.
Alcoholis	f 3 ij.
Glycerini	f 3 xij.
Tr. cardamomi comp	ad. f 3 ij.

M. Signa. One teaspoonful every two to four hours, to be continued throughout the disease, and dose increased or diminished as necessary to control paroxysms.

Tr. belladonna, increased to the point of tolerance, is an old and valuable method of treatment. Bromides, chloral, hydrocyanic acid, acetanilide, phenacetin, and other antispasmodics are used. Inhalations of hot steam, impregnated with thymol, eucalyptol, carbolic acid, tr. iodini comp., or camphor, give much relief. Avoid dry furnace heat. It is advisable to air rooms daily and impregnate the air with medicated steam. Local applications to throat are of no use. Treat all complications as they arise, and regulate diet to digestive ability. Small doses of arsenite of copper, gr. $\frac{1}{1000}$, every hour, have given good results in reducing the number of paroxysms.

PAROTITIS.

Synonyms.—Mumps. The French call it *Oreillons*, and the Germans *Ziegenpeter*.

Definition.—Parotitis or mumps is an acute, contagious, specific inflammation of one or both parotid glands, and is most common in children from five to fifteen years.

Etiology.—*Idiopathic parotitis* (mumps) is supposed to be due to a germ that has a period of two or three weeks' incubation. *Epidemic*, and most common in males. It is *self-protective*. *Contagion* is said to take place through the breath. *Symptomatic parotitis* is a concomitant of some other disease, and *should never be termed mumps*. Due to pyæmia, diphtheria, and septic fevers, such as typhoid, typhus, etc. It is a sequela of influenza.

Symptoms.—Commences with a chill and fever. There is headache, constant thirst, sometimes vomiting and lassitude. Temperature may reach 103° F. Jaws become stiff in a few days, and pain is felt under the ear. Parotid gland is tender and swollen. Submaxillary glands are swollen and tender. It begins on one side, and may spread to the other. Swelling continues for six days, is stationary for two or three days, and runs its course in about eleven days. Mastication, talking, sour food or drink will cause intense pain in the gland, on account of stimulating it to activity. May terminate in resolution or suppuration. Fever is always higher when suppuration is present.

By *metastasis*, inflammation may suddenly leave the parotid gland and appear in the testicle, meninges of the brain, or, if in the female, in the ovaries of mamma; but this is rare. Pulse is usually quick; urine scanty and high-colored. Side of the face is red and swollen. Salivation and loss of hearing are

frequent. Shooting pains are felt in the ear. Facial paralysis, from involvement of the portia dura. If temperature continues after the decline, be on the watch for metastasis. Urethritis may complicate.

Pathology.—*Mumps*.—An inflammation due to a germ, and extending through the salivary ducts, causing an involvement of the parotid gland and its tissues. Redness, heat, pain, swelling, and perverted function. Tissues around the gland may be involved. There is an exudation into the gland and surrounding tissues, which may be absorbed or give rise to suppuration and destroy part of the glandular function.

Symptomatic parotitis is always metastatic, and results in suppuration, with destruction of part or the whole of the gland.

Diagnosis.—*A sour pickle or lemon makes diagnosis certain*, but is a very painful procedure. It can hardly be confounded with other troubles.

Prognosis.—Is favorable, and is rarely fatal. In metastasis the function of the testicle or organ involved may be destroyed. Duration is about eleven days. *Symptomatic parotitis* usually means suppuration, and may be deafness.

Treatment.—*No specific*. Absolute rest in bed. Low, non-febrile, liquid diet, such as beef-tea, soups, yolk of egg, milk, or custards. Allow no solid food and no seasoning. Wrap the side of the face in raw cotton or wool. Fever mixture or sponging the body with tepid water. Cathartics of sodii phosphas or Rochelle salts. Bartholow recommends extractum jaborandi fluid., gtt. x-xxx, to abort the disease. Gray powder, gr. $\frac{1}{3}$, three or four times a day, will relieve swelling and pain. Inunctions of hot lard and turpentine, belladonna, or glycerin. Hot fomentations to the gland will relieve pain and facilitate formation of pus. Evacuate pus as soon as detected. In prostration, give stimulants and apply warmth

to the extremities. Pyoctanin, ten-percent., solution, or hydrogen peroxide, applied to the abscess when opened, will stop suppuration. Sulphide of calcium, gr. $\frac{1}{10}$, every three hours, to prevent suppuration.

In *orchitis* or *mammitis* apply poultices or leeches, and treat symptoms. In *symptomatic parotitis* apply poultices and leeches, and give the best diet, fresh air, and exercise during convalescence.

TETANUS.

Description.—Tetanus is a spasmodic and tonic muscular contraction of certain groups of muscles, accompanied by pain and rigidity. It may occur at any age, and usually follows traumatism (*traumatic tetanus*). It may follow a mere scratch, the entrance of a splinter, or a severe wound. May occur in babies (*tetanus neonatorum*). Exposure to cold and wet. May occur without any apparent cause (*idiopathic tetanus*).

Onset is slow or sudden, with a sore, tired, and stiff feeling in the muscles of mastication and neck, which may continue several hours or days, and then extend to the muscles of the back and chest—rarely to the extremities. Stiffness and soreness increase; muscles contract, become rigid, and draw the affected parts into various positions. Muscles of mastication become prominent and hard, and lock the jaw so that it cannot be opened voluntarily or by mechanical means (*trismus* or *lockjaw*). Muscles of expression are contracted, giving the face the appearance of laughter (*risus sardonicus*). Pains increase, and become agonizing; paroxysms of extreme muscular contraction, lasting several minutes or seconds, occurring at half-hour intervals; body is often drawn backward until the back of the head and heels touch. Noise, vibration, fright, or contact produce paroxysms. Pulse is weak; tem-

perature rises as paroxysms increase, and may reach 107° F. before death. Delirium is a late symptom. Retention of urine. Death is the common termination, and may occur in one to ten days from involvement of muscles of respiration or complications. Recovery may occur in six to eight weeks. Tetanus is probably due to a microörganism. Brieger has made experiments with a *bacillus tetanus*, and has isolated several ptomaines which produce symptoms almost identical with tetanus.

Treatment.—*Rest in bed*, avoiding all excitement, bright light, noise, and contact. Attention must be given to all wounds, and antiseptic measures thoroughly used. Chloral, administered in full doses short of its toxic action (twenty to sixty grains every four to six hours, per rectum, in warm solution), will assist in reducing spasms, but often fails. Bromides are unsatisfactory. Eserine, Calabar bean, and strychnine in full doses are recommended, but are of no value in severe cases. Morphine may be used to some advantage as a hypnotic and narcotic. Anæsthetics are most serviceable in paroxysms to relieve severe pain, when other measures fail, but must be used very cautiously.

Diet must be liquid, stimulating, and nourishing. It may be administered per rectum, or food may be passed into the œsophagus by a tube introduced through the nose or the space left by an extracted tooth. Feed at regular intervals. In hyperpyrexia use cold baths, even though they may be attended by a paroxysm. The urine must be drawn, and the catheter should be used cautiously.

HYDROPHOBIA.

Description.—Hydrophobia ("fear of water"), occurring in man and synonymous with *rabies* in the dog and lower animals, is an acute, infectious disease, transmitted only by di-

rect inoculation of the virus through some abrasion of the skin or mucous membrane. It usually follows the bite of a rabid animal whose saliva is rich in the virus of the disease. If the bite is received through thick clothing, the virus is often wiped from the teeth and there is no infection. Wounds on exposed parts are most dangerous. These wounds and abrasions heal readily, and to all appearance get well. *Period of incubation* varies from ten days to several months.

The attack begins in one of two ways: the healed wound or sear begins to itch or burn, and rapidly becomes inflamed and painful, for several hours or days preceding the onset; or the wound may show no signs of trouble, but a general feeling of uneasiness, feverishness, depression, anorexia, and insomnia will appear. There is a tired feeling in the throat, followed by slight irritation and difficulty in swallowing, especially marked when liquids are taken. There is a general spasm of the muscles of deglutition and respiration, caused at first by an attempt to take water, later by the mere suggestion of water or a slight noise. Later the muscular spasms become general.

Saliva is thick, accumulates in the mouth, and is either expectorated or blown from the lips—hence the term “frothing at the mouth.” *Temperature* rises; delirium occurs, and patient cries out; imitates the bark of a dog, if his mind is so impressed; attempts to bite or fight those who are about him, and is filled with all kinds of maniacal hallucinations. Later there is absolute inability to take food; spasms are very severe and general, but toward the last may diminish or cease entirely, when deep coma and paralysis supervene, and death follows. Recoveries are the exception, and the disease never lasts more than ten days.

The *pathological changes* found consist of an inflammatory action at the base of the brain and the medulla oblongata

There are small hemorrhages, a large collection of leucocytes, and inflammatory exudations in these parts.

Treatment.—*Prophylactic.*—Many so-called cases of hydrophobia are purely mental in character (*psychrophobia*), but, nevertheless, fatal. It is never wise to kill an animal the moment it has bitten a person. To be certain whether the animal was rabid, pen him up for several weeks and carefully note his symptoms. Many persons have been needlessly frightened and even killed by the mere uncertainty whether they had been bitten by a rabid or harmless animal. Make all such wounds bleed freely by incisions, thoroughly cauterize with some acid, and treat antiseptically.

M. Pasteur, in 1885, devised a method of a successive series of inoculations with attenuated virus, for the prevention of an attack in those who were supposed to be inoculated. His virus is prepared from the spinal cord of rabbits which have been inoculated successively with the virus of hydrophobia; first from one, then the other, until a minimum attenuation is attained. It is claimed that by inoculating a person, first with the weakest virus, then with a stronger, and so on continuing until the strongest is used, the disease can be averted entirely. Quite a number of "Pasteur Institutes" are now using this method, but its efficiency still remains a question of doubt. Treat paroxysms as in tetanus (p. 86).

ANTHRAX.

Synonyms.—Carbuncle; malignant pustule; *charbon*; splenic fever, in animals.

Description.—Anthrax is caused by the *bacillus anthracis*, which is an aërobic germ about $\frac{1}{2000}$ inch long, and reproduces itself by segmentation and the formation of spores.

The disease is contracted by direct inoculation or eating food which is contaminated by it. Workers on hides, morocco, wool, and rags, and butchers are mostly affected. *Period of incubation* varies from one to five days.

When inoculated through a scratch or wound, there is a sensation of itching, burning, and stinging, followed in some hours by one or two vesicles which contain a clear, watery fluid. The vesicle soon breaks, and assumes an inflamed appearance with a dark-purple color. The spot swells, and involves the surrounding tissues for one or two inches. Small vesicles appear on the surface of the swollen area, and several points of suppuration form, which ultimately break, leaving the carbuncle full of small suppurating sinuses. The surrounding lymphatics are enlarged, and frequently suppurate. There is fever varying from a slight amount to that of general pyæmia. Delirium, great prostration, general pyæmic symptoms, and, in severe cases, death. Mild cases recover after prolonged convalescence.

At times the pustule or carbuncle forms in one of the internal organs, producing symptoms which will vary according to the organs involved. The *internal forms* are rapidly fatal.

Treatment.—A malignant pustule should be deeply incised by crucial incisions. Many surgeons follow incision by the application of pure chloride of zinc to cauterize the parts. After incising freely, constantly wet the parts with peroxide of hydrogen or a solution of the acid bichloride of mercury. If seen quite early, a carbuncle may be aborted by injecting carbolic acid (about two-percent. solution) around its base, or by free incisions and cautery. Always follow strict antiseptic treatment. *Internally*, administer iron and quinine in full doses. Give most nutritious diet. Alcoholics as in pyæmia. Strictly avoid depressants.

TUBERCULOSIS.

Definition.—An acute or chronic, infectious, contagious, specific disease, due to a distinct germ; manifested by the formation of nodular masses of caseated or granular cells of various sizes (tubercles) in different parts of the body.

Etiology and Pathology.—The great *predisposing causes* are heredity; scrofulous diathesis, which is synonymous with tubercular diathesis; pneumonia; chronic bronchitis; debility; crowding in close houses and mills; a sedentary, indoor life; low, damp climates; sleeping or associating with tuberculous subjects; starvation; over-work; alcoholism; exposure; neurasthenia and nervous affections; syphilis; diabetes mellitus. Frequently follows child-bearing.

Ecciting cause is the *bacillus tuberculosis*, first isolated and demonstrated by Robert Koch of Berlin, Germany, in 1882. The *bacillus* is blunt at both ends; produces spores; motionless; measures about $\frac{1}{3500}$ of an inch in length, and can only be seen with a high-power microscope after staining. Laplace says: "It falls on a suitable soil; develops at the expense of the tissues; liberates an irritant (ptomaine) which causes proliferation of cells and inflammation. These cells degenerate, necrose, change from a hyaline to a milky or cheesy mass by fatty degeneration or coagulation necrosis, break down, and, when in the lungs, form a cavity." *Bacillus* develops in epithelial or fibrous tissue; generates ptomaines, and grows best at an average temperature of 98.5° F. For convenience of study, Laplace divides tuberculosis into:

"1. *External or surgical tuberculosis*, which comprises lupus (tuberculosis of the skin), and tuberculosis of the joints. 2. *Internal or medical tuberculosis*, including tuberculosis of the

lungs and of other internal organs." The second class comes under our consideration in this work.

Following is the process of staining bacillus used in the Pathological Laboratory of the Medico-Chirurgical College of Philadelphia, Pa.:

"Expeditions Examination of Sputum for Tubercle-Bacilli.

"1. Apply a small speck of recent sputum to a cover-glass, spread it out thin, and let it dry by waving it to and fro in the air.

"2. Slightly heat the cover by passing it through the flame of an alcohol-lamp, three times, rather slowly.

"3. Stain the portion of now thoroughly dried sputum by pouring upon it a few drops of the red stain (Ziehl's solution, composed of fuchsin, one part; carbolic acid, five parts; alcohol, ten parts; water, q. s., to make one hundred parts). While the solution is on the cover-glass, hold it in the flame of the lamp and heat until vapor rises.

"4. Decolorize at once by immersion in water acidulated with nitric acid.

"5. Pour some alcohol over it, and finish decolorizing by repeated immersions in the acidulated water, if required.

"6. Pour some distilled water over the specimen, and wash it until clear and apparently colorless.

"7. Color the background by staining with methylene-blue solution.

"8. Dry the specimen.

"9. Apply to slide and mount in Canada balsam."

ACUTE TUBERCULOSIS.

Synonyms.—Acute miliary tuberculosis; acute phthisis: "galloping consumption."

Definition.—A general, acute tubercular disease (inflam-

mation), manifested by the deposit of miliary tubercles in the lungs and other organs; running a characteristic, rapid course, and terminating in death.

Etiology.—Usually hereditary, and when lying latent is excited by an acute illness, exposure, over-work, bad hygiene, or use of Koch's lymph. Most common in young adults, but may occur at any age. Often follows typhoid fever.

Symptoms.—*Begins suddenly* with a chill and rapid rise of temperature; or follows some acute illness with chilly sensations and gradual onset of fever. Morning temperature is 99° to 101° F.; pulse rapid and irregular—sometimes dichrotic; respiration hurried; cough, slight at first, soon becomes very hard. *Expectoration* is frothy mucus, often stained with blood; pain in chest, increased by coughing. *Profuse night-sweats*, followed by extreme prostration and marked emaciation. *Hemorrhage* is not the rule at first, but often occurs during later stages. Marked dyspnœa. *Diarrhœa* from intestinal complication. Symptoms all increase; delirium; involvement of other organs; and always terminates fatally in true cases. *Percussion* usually clear. May find spots of dullness at apex. Breathing is vesiculo-bronchial, followed by fine, moist and bubbling râles. Cavities form in later stages.

Pathology.—Surface of both lungs is studded with small tubercular masses the size of a mustard-seed. Each tubercle is surrounded by an inflammatory area, representing the three zones of inflammation. Portions of the lung tissue are necrosed. Small cavities in places. Intestines, spleen, and other organs are studded with tubercles. Each bacillus, with its product (ptomaine), acts as an irritant; causes congestion, cell-proliferation, diapedesis, and a localized pneumonia. This cuts off nutrition; prevents proper aëration of the blood; causes atrophy and degeneration of lung tissue, accounting for caseation, fever, and dyspnœa.

Diagnosis.—*Typhoid fever* has characteristic temperature, eruption, abdominal symptoms, and absence of bacillus tuberculosis.

Prognosis.—*Acute miliary tuberculosis* always terminates fatally in less than one year. Cases, so called, that recover are not of the miliary type.

Treatment.—*Palliative. Symptomatic.* Koch's lymph is absolutely contra-indicated, as it means certain death in a short period after administration. (See *Chronic Pneumonia* and *Chronic Tuberculosis*.)

CHRONIC TUBERCULOSIS.

Synonyms.—Chronic phthisis; consumption; tubercular phthisis.

Definition.—A chronic tubercular inflammation of one or both lungs, usually limited to the left or right apex; recognized by hectic fever, cough, hæmoptysis, and presence of bacillus tuberculosis.

Etiology.—See *Tuberculosis* and *Acute Tuberculosis*.

Symptoms.—*Begins insidiously* with slight cough, worst in winter; expectoration of frothy mucus, often nummular; improper chest-expansion; gradual loss of health and flesh; lassitude and fever in afternoons; slight pains in one or both lungs; occasional hæmoptysis. Following some acute illness, pneumonia or bronchitis, prolonged exposure or close confinement, cough becomes constantly annoying; expectoration profuse, often purulent or blood-streaked; marked emaciation; *constant hectic fever*, about 99° to 100° F. in the morning, and 101° to 104° F. in the evening; *exhausting night-sweats*; loss of appetite; *frequent hæmoptysis*; diarrhœa; and a *very hopeful disposition* during the whole disease. *Respiration* increased; prolonged expiratory sound; crepitant, subcrepi-

tant, and crackling râles; later, vesiculo-bronchial breathing and moist râles. *Percussion* dullness, mostly limited to left apex.

During *later stages* cough increases; dyspnœa; prostration; peculiar red line along border of gums (*gingival line*); clubbing of fingers and bluish color to nails; œdema of lower extremities. Secondary involvement of other organs. *Presence of bacillus tuberculosis.*

Pathology.—Simply that of tuberculosis, already given, *q. v.*

Diagnosis.

CHRONIC BRONCHITIS.	PNEUMONIC PHTHISIS.	TUBERCULAR PHTHISIS.
Little or no dullness at apex.	Dullness at any part of the lung.	Dullness at left or right apex.
Slight constitutional disturbance.	Constitutional disturbance.	Marked constitutional disturbance.
No hæmoptysis.	No hæmoptysis as a rule.	Frequent hæmoptysis is symptomatic.
No tubercular family history.	No tubercular family history necessary.	Tubercular family history.
No fever.	Fever in afternoon; <i>no fever mornings.</i>	<i>Constant fever</i> , worst at night.
Absence of bacillus tuberculosis.	Absence of bacillus tuberculosis.	Bacillus always present.
Very slight or no emaciation.	Emaciation, varying in degree.	Marked emaciation.
No night-sweats.	Night-sweats.	Profuse, colliquative night-sweats.
No cavities in lungs.	Cavities present.	Cavities.
Bronchial râles.	Bronchial and friction râles.	Subcrepitant râles.
No local manifestations.	No local manifestations.	Enlarged glands; lupus; coxalgia.
Last for years.	Last for years.	Usually die within three years.
No reaction with Koch's lymph.	No reaction with Koch's lymph.	Marked febrile reaction with Koch's lymph.

Prognosis.—Usually fatal. Life may be prolonged several years by proper treatment in bad cases. If treated early, complete cure may result.

Treatment.—*Preventive.*—*Avoid* strictly all close confinement, study, over-work, exposure, improper diet and climate, dust, and intimate association with tubercular subjects. *Never sleep with tuberculous patients.* Insist on best diet; out-door life in proper climate; plenty of exercise; daily “lung gymnastics” and full breathing. Improve general health with tonics and cod-liver oil, if indicated. *Strictly discourage marriage and intermarriage* of persons predisposed to, or who are suffering with, tuberculosis.

When a patient becomes infected with the bacillus, treat as already indicated in chronic bronchitis and chronic pneumonia. The only hope of prolonging life lies in most nutritious diet, change of climate, reduction of fever and cough as indicated. Creosote, iodine, oxygen, aniline, sulphureted-hydrogen rectal injections, carbon dioxide, inhalations of compressed air and hot air, arsenic, and a host of other remedies, so-called specifics, have been relegated into obscurity in so far as their *specific* action is concerned, and dependence has been placed on symptomatic, climatic, and hygienic treatment. It is absolutely impossible to administer germicides in sufficient quantity to kill the bacilli without killing the patient. *Koch's lymph*, the latest remedy at this date, gives some promise of new fields of investigation, but cannot be classed as a specific. (See *Koch's Lymph*.) Dr. Thomas J. Mays, believing that tuberculosis is largely dependent upon the condition of the nervous system, administers sulphate of strychnine in increased doses until the limit of its physiological toleration is reached, and continues this maximum dose for months, with the best results and amelioration of many untoward symptoms.

Brewer thinks that ordinary vaccine virus may mitigate the disease.

Complications are treated as already indicated under proper headings.

TUBERCULIN.

Investigators have been searching for ages for a specific in the treatment of tuberculosis, and although Robert Koch of Berlin seems to have found it in laboratory practice, it is very doubtful whether it can be used as such clinically. Koch, being of an investigative turn of mind, prepared a pure culture of the bacilli tuberculosis, thoroughly sterilized it with heat, preserved it with glycerin and carbolic acid, and gave to the profession, in the year 1890, a "lymph" (tuberculin) to be used in treating tuberculosis. It is dark-brown in color, and heavier than water. Tuberculous patients, when hypodermically injected with one milligram of the lymph diluted with distilled water, responded by a rise of temperature (varying from 99° to 105° F.) within a few hours, and a subnormal temperature on the second day. Governed by temperature and reaction, the dose is gradually increased every three to five days until temperature ceases to rise. The system is then said to be saturated with lymph, and the tuberculous process checked (?). Patients apparently improve under this treatment.

When lymph enters the circulation and comes in contact with the bacilli, it acts as an irritant, causes hyperæmia, formation of new cells, diapedesis, and, when in the lungs, a localized catarrhal pneumonia. Tuberculous tissue seems to necrose under its action, and is thrown off by cough, is absorbed or encysted. Many persons have died from its hasty and careless use, and post-mortem shows the cause of death to be catarrhal pneumonia or meningitis. Latent tuberculosis is brought into activity by its use. Best results have been obtained in surgical tuberculosis. Although in the experi-

mental stage, without any *positive* cures on record, we are warranted in drawing the following conclusions :

1. Koch's lymph causes febrile reaction in tuberculous patients, and is a valuable means of diagnosis; but owing to the fact that it excites latent tuberculosis and causes death in some cases, its use in man is questionable.

2. Lupus and other forms of external tuberculosis improve rapidly under its use, and are *apparently* cured. Time only will demonstrate this point.

3. It must be *absolutely avoided* in miliary tuberculosis and tubercular meningitis. Must not be used in tubercular laryngitis unless tracheotomy has been previously done or you stand ready to perform it.

4. "We cannot restore destroyed lung-tissue, but if we can prevent tuberculosis in the beginning—that is, change the tuberculous soil of the patient—we could soon have the disease under as complete control as smallpox is to-day." (Laplace.)

SYPHILIS.

Synonyms.—Pox; "bad disease."

Definition.—A constitutional, contagious, infectious, inoculable, acquired or hereditary, venereal disease, recognized by a distinct period of incubation and primary, secondary, and tertiary lesions of the skin, mucous membranes, and other tissues.

Etiology.—Acquired by inoculation through some abrasion on the penis or vaginal mucous membrane during coition. The virus may be transmitted by kissing; from towels, articles of dress, or inoculation from any secondary or primary source. It is self-protective. *Period of incubation* varies, but is about twenty-one days.

Symptoms.—*Primary.*—During the period of incubation

there are no symptoms. About the twenty-first day there is slight burning or itching at the point of inoculation, which is followed by the formation of a small, hard papule which feels like a shot under the skin or mucous membrane. It soon enlarges, becomes indurated, and forms a flat, hard mass covered with fine, dry scales, which are soon replaced by an open ulcerated surface. This is known as the *Hunterian or hard chancre*. There is rarely more than *one primary lesion*. After pursuing a variable course it heals, leaving a white cicatricial scar. Hard chancre is rarely accompanied by suppurative inflammation in the lymphatic glands, although non-suppurative inflammation does occur. The surface of syphilitic ulcers has a coppery, raw-meat appearance.

Secondary symptoms manifest themselves about three months after inoculation. An *eruption*, varying in character, appears on the forehead, face, chest, back, and limbs. It may be erythematous, macular, squamous, papular, vesicular, or pustular, is of a coppery or raw-meat hue, and may continue from three months to one year, often resulting in scars. *Excrescences* or warty growths often form at the junction of the skin and mucous membrane of the mouth, penis, vagina, or anus.

Mucous patches or erosions of the mucous membrane of the throat and mouth form, and often produce deep coppery or frosty ulcers. *Sore throat* is present with the rash, and varies from a mere redness to the appearance of follicular or ulcerative inflammation. Ulcers are shallow, hardened at the edge, slightly undermined, not very painful, and covered with a white or coppery detritus. Tongue often cracks and fissures. Lymphatic glands in the groin, neck, axilla, and at the bend of the elbow, are enlarged and tender, but rarely suppurate. Hair falls, but rarely causes complete baldness. Fever is absent or very slight. Aching and soreness of the bones is char-

acteristic. The eyes are affected with iritis, retinitis, or choroiditis.

Tertiary stage appears in one to ten years after inoculation, and will intermit and remit for an indefinite period. It is recognized by late eruptions, gummata, periostitis, and involvement of the various organs. Macular, erythematous, squamous, papular, vesicular, or pustular eruptions, similar to the secondary stage, appear at any time. Large irregular patches of an eczematous nature may form on any part of the body, and result in large, infiltrated, coppery-colored ulcers. Nodules or gummata form in the periosteum, liver, spleen, glands, and other parts, and cause necrosis, suppuration, and nervous symptoms when formed in the cranium (*cerebral syphilis*). Pains in the bones, muscles, and joints are frequent at night. Pregnant women suffering with syphilis often abort; or, if they go to term, their children are weak and suffer with congenital syphilis.

The course of syphilis is irregular, and spontaneous cures are never effected. Years of constant treatment are required to thoroughly eradicate it. Death is rare during the first and second stages, but the formation of tertiary lesions may prove fatal.

Treatment.—In the *primary* and *secondary* stages, *mercury* is the one remedy which is almost specific. It must be pushed to the verge of tolerance, and its action maintained for two or three years to prove curative. Bichloride of mercury, gr. $\frac{1}{60}$ to $\frac{1}{30}$, may be given in pill form, four times daily, gradually increasing the dose. Protiodide of mercury, gr. $\frac{1}{8}$ to $\frac{1}{3}$, three or four times daily, combined with strychnine and belladonna. Hydrargyrum cum creta, gr. j–ij, three times daily. Calomel is also given. By pushing mercury energetically from the time of inoculation or the appearance of the primary lesion, secondary and tertiary symptoms can be prevented. If

mercury cannot be taken by the mouth, it may be given in the form of hot inunctions (ung. hydrargyri oleati, ten to twenty percent.) three or four times daily; or by hypodermic injections of the bichloride of mercury combined with chloride of sodium and distilled water, repeated every other day. Cleanse all ulcers and treat antiseptically with aristol, iodoform, boric acid, calomel, or oxide of zinc.

Tertiary Syphilis.—The iodides are of more service than mercury. Full doses of iodide of potash or soda, protiodide of mercury, syrup of hydriodic acid or syrup of the iodide of iron, three times daily, given in plenty of water. Treat eruptions with ung. hydrargyri oleati (ten to twenty percent.) locally.

In all cases insist on an active, out-door life; tonics of iron, arsenic, quinine, and cod-liver oil. Syphilitics should not marry until they have undergone a faithful course of treatment of not less than three years. They should avoid direct contact with others, kissing, and the use of the same towels that others use. In fact, syphilis should be treated as any other contagious disease.

BERIBERI.

Description.—Beriberi is an endemic, infectious, mildly contagious disease, characterized by the appearance of multiple neuritis, dropsical conditions, anemia, and peculiar cardiac murmurs. In Japan it is known as *kakke*. It is also called "asthmatic dropsy" and "Ceylon disease." It is endemic in China, Japan, South America, and the islands of the tropical Pacific Ocean. Scheube and Baelz claim that it is a "primary peripheral neuritis."

Dr. James M. Anders of Philadelphia has reported two cases, and the following points are noted: Early symptoms

were pain in the abdomen; occasional nausea, vomiting, and diarrhœa; heart feeble, with increased area of dullness, arrhythmia, and a systolic murmur; spleen slightly enlarged; fever absent or very mild; anæmia; legs œdematous; ascites in one case; reflexes diminished or lost; areas of the skin become anæsthetic; pain in the legs and joints of the knees in walking. During convalescence the cardiac murmurs may disappear and motor symptoms improve rapidly. The anæsthetic condition is the last symptom to disappear, and is often complete when other symptoms subside. The disease is probably due to a specific germ.

Da Costa says its spread is favored by over-crowding and bad hygiene; that muscular power is often lost in the lower extremities, and electro-motor contractility is diminished but not lost. One attack strongly predisposes to another for several summers.

Treatment.—Confinement in bed until all symptoms subside. If there is diarrhœa, meet it with salol, sulphocarbonate of zinc, and bismuth. In constipation use the salines. Sustain and nourish with concentrated beef-juice, milk, eggs, red meats, and albumens. Moderate massage and electricity, when acute symptoms subside. Infusion of digitalis with strychnine, short of toxic effects. Follow with tonics of iron, arsenic, manganese, cod-liver oil, and strychnine. Fresh air and daily salt baths. Treatment is symptomatic.

GENERAL NON-INFECTIOUS DISEASES.

MYALGIA.

Synonym.—Muscular rheumatism.

Definition.—An acute or chronic affection of the voluntary muscles and fasciæ, recognized by soreness, pain, stiffness, diminished functional activity of the parts affected, and not accompanied by constitutional symptoms.

Etiology.—Exposure to cold and wet; prolonged muscular exertion; muscular sprains; rheumatic and gouty diatheses. Most common in adult life.

Symptoms and Varieties.—*General.*—Begins gradually or suddenly with a feeling of soreness, stiffness, and pain in one or more muscles or groups of muscles, which is recognized by every attempt to bring them into functional activity. Pain is absent during rest, and is increased by pressure and motion; is always worst after prolonged rest, and tends to diminish, in mild cases, after muscular exertion. There are no constitutional symptoms and no cardiac involvement. Different terms are used to express the various groups of muscles affected.

Lumbago, lumbodynia, is an involvement of the muscles on one or both sides of the lumbar region, and is most common in old men. Pain is always increased by turning, stooping, or attempting to rise to the erect position.

Pleurodynia, "stitch in the side," involves the intercostal and thoracic muscles; is increased by full inspiration, coughing, sneezing, laughing, or use of the arms. Pain is sharp and shooting.

Cephalodynia, cephalalgia, is bilateral; involves the muscles of the scalp; is increased by elevating the eyebrows and moving the scalp.

Stiffness of the muscles of the neck sometimes amounts to a *spasmodic wry-neck*, and is unilateral. The head is held or drawn toward the affected side, and every effort to turn it causes pain.

Treatment.—Rest must be enjoined for as long a time as necessary, and a mild, nutritious diet given. Establish free action of the bowels by calomel and salines. Encourage diaphoresis by hot drinks, pilocarpine, and pulv. ipecac. et opii, or hot-water cloths and bottles. Great relief follows the application of hot cloths, poultices, water-bags, or hot iron. Inunctions of hot camphor, jaborandi, and lard, followed by dry heat. Stimulating liniments are useful.

R

Tr. rhois toxicodendron..... gtt. xvj.

Tr. bryoniæ..... gtt. viij.

Aquæ..... fʒ ij.

M. Signa. One teaspoonful every one or two hours until relieved.

Full doses of acetanilide, phenacetin, salicylate of soda, or pill acetanilide comp. (p. 27) often prove very efficient. Morphina may be used as a last resort for the relief of pain.

When it becomes chronic, administer chloride of ammonia, gr. x-xv, every four hours. Iodide of potash, colchicum, guaiacum, iron, and arsenic are used. A mild faradic current—not sufficient to cause contractions—applied to the affected muscles is quickly curative. The positive pole of a galvanic current applied to the painful area and the negative to a neutral point affords quick relief. Massage is advisable in chronic cases.

GOUT.

Definition.—A general, acute or chronic, hereditary disease, recognized by extreme pain and swelling of one or more of the small joints, fever, uric acid in the blood, and the formation of tophi about the affected parts.

Etiology.—Gout is hereditary; most common in middle-aged men who lead an inactive, sedentary, indoor life, and who partake freely of a rich, albuminose diet, wines, and malt liquors. Attacks are frequently brought on by prolonged mental activity, anger, dissipation, and lead-poisoning.

Symptoms.—*Acute Gout.*—For several days there is a slight headache, indigestion, constipation or diarrhœa, and a general feeling of uneasiness. Patients can often recognize an on-coming attack for several days before it manifests itself. It *begins suddenly at night*, when the patient is disturbed by a sharp pain in the metatarso-phalangeal joint of one great toe, which is increased by motion, pressure, or the slightest jar. Pain continues, and is worst at night. Chilly sensations, fever of short duration (101° to 102° F.), nausea, constipation, and increased heart-action. The affected joint becomes swollen, red, and extremely sensitive; the veins of the leg and foot are prominent, and muscular spasms of the calf of the leg occur. *Urine* is very high-colored, scanty, acid in reaction; shows a diminution of uric acid, lithates increased, and a deposit of a “brick-dust” sediment. Symptoms gradually decline; pain and swelling decrease, and the skin over the affected joint desquamates. Sometimes two or more joints in the toes or fingers are involved.

In five to fifteen days the patient is well and feels better than before the illness. One attack predisposes to another, which may come yearly, semi-annually, or be much more frequent.

Chronic Gout.—Many attacks of acute gout lead to a chronic condition, which is recognized by general enlargement of the joints of the hands and feet, producing various deformities in them. *Tophi* form about the joints, in the helix of the ear, and under various parts of the skin. They consist of hard, concretionary nodules of urate of soda and other salts. They may inflame, ulcerate, and escape from the skin. There is always slight pain in the joints in walking, which is increased by damp and stormy weather. Urine is high-colored, and deposits a brick-red sediment. Gout affects the kidneys and other internal organs, and manifests itself in many irregular forms.

Pathology.—Gout seems to depend upon an increase of urate of soda in the blood, which tends to deposit about certain joints, tendons, cartilages, and internal organs, producing the symptoms of inflammation present. These deposits and tophi are composed of sodium urate, sodium chloride, and calcium phosphate. The general arterial system becomes atheromatous, and causes hypertrophy of the left ventricle of the heart.

Diagnosis.—Heredity; sudden onset at night, with pain in one small joint; condition of urine; age, sex, and station in life.

Prognosis.—*Acute gout* lasts one or two weeks, is rarely fatal, and tends to return at irregular intervals. *Chronic gout* is dangerous on account of atheroma and involvement of the kidneys, and materially shortens life by complications or intercurrent acute diseases.

Treatment.—*Prophylactic.*—Take daily exercise in the open air, and avoid sedentary habits. Keep bowels active daily. Frequent hot baths. Avoid all forms of wines, liquors, and alcoholic drinks. An excess of meats and sweets should be avoided. All articles of diet that disagree should be avoided. Free use of lithium waters is beneficial at all times.

Acute Gout.—Five to fifteen grain doses of acetanilide, phenacetin, or salicylate of soda, every two to four hours, afford great relief to pain. Full doses of vinum colchici, given with bicarbonate of soda, every four hours. In very severe pain give a hypodermic of morphina. Administer saline or drastic cathartics freely. Keep patient in bed; elevate the affected parts and bind them with *raw* cotton. Applications of belladonna, camphor, or soap-liniment often relieve. Lead-water and laudanum (U. S. P.), constantly applied are recommended. Avoid poultices, cold, and fomentations. *Dry heat* is best. Light milk and farinaceous diet. When acute symptoms subside, continue treatment with piperazine, gr. xv daily, colchicum, lithates, or alkalies.

Chronic Gout.—Free use of lithium waters, piperazine water; active exercise; prophylaxis as given above. Wine of colchicum and iodide of potassium, three times daily, give best results. Treat acute exacerbations as indicated.

RACHITIS.

Synonym.—Rickets.

Definition.—A constitutional disease, recognized by a peculiar cachexia and a deficiency of the earthy constituents of the bones, producing characteristic deformities and constitutional disturbances.

Etiology.—A disease of childhood in both sexes. It is not hereditary, but occurs most frequently among the children of poor, drunken, syphilitic, or tubercular parents. It may be congenital, but is most manifest after the first year. Bad hygiene, artificial feeding with improper food, and mother's milk, which is deficient in quantity or quality, are active causes.

Symptoms.—Onset is so gradual that it is not recognized early. Among the first symptoms is profuse sweating around

the back of the head and neck during sleep; restlessness, uneasiness, and tossing when asleep; slight, persistent diarrhoea; crying and fretfulness when lifted, carried, or disturbed; and a lack of muscular power.

The epiphysial extremities of the long bones enlarge—most marked at the wrist, knee, and ankle joints. The sternal extremities of the ribs show a beaded enlargement on both sides of the sternum, making a double row called the *rickety rosary* or “beaded ribs.” Eruption of the teeth is delayed six to twelve months, and when they do appear they soon decay or fall out. The bones are soft, elastic, and, by muscular contraction and the weight of the body, are drawn out of shape, causing bow-legs, prominent sternum with squaring of the upper part of the chest (pigeon-breast), narrowing of the pelvis, and deformities of the head. Fracture of the bones is rarely complete (*green-stick fracture*).

A *rachitic head* is flattened laterally, elongated antero-posteriorly; forehead prominent, square, and overhanging; face small and cramped; expression is that of an old person; fontanelles are large, and close late; veins on forehead are prominent and engorged.

The spleen and liver are enlarged and tender; appetite is variable; nervous, and prone to convulsions. These cases are very susceptible to pneumonia, pleurisy, and intercurrent diseases which often prove fatal. Recovery may be complete without deformity, but most cases retain some deformity through life.

Pathology.—The whole process resolves itself into a lack of ossification of the bones, due to an absence of mineral salts in the blood. Microscopical examination shows an increase and great activity of the number and size of cartilage-cells in the bones; the interstices are filled irregularly with marrow and embryonic tissue in place of mineral salts; the vessels are

enlarged; the cartilage-cells are irregularly replaced by bony tissue, and produce bone which lacks a large percentage of normal mineral salts. Section of an epiphysial end and cartilage shows healthy cartilage on one side, almost healthy bony tissue on the other, and, interposed, a translucent, pearly-gray cartilage, very irregular and greatly enlarged. The spleen, liver, and lymphatic glands contain an increase of fibrous connective tissue.

Treatment.—Clothe warmly with medium-weight under-clothing. Every night, before retiring, the child should be freely bathed in a warm salt-bath, and then rubbed briskly with a soft, coarse towel. Follow the bath with an imunction of hot cod-liver oil or olive oil. Keep the child in the open air as many hours of the day as possible, and, to prevent deformities, do not allow him to bear his weight on the extremities. If mother's milk is not sufficient or good, feed with cow's milk. Older children require concentrated beef-juices, extracts, and scraped beef. Avoid starchy foods. Treat diarrhoea as indicated. Syrup of the iodide of iron and lactophosphate of lime should be given in full doses, three times daily, for many months. Deformities can be remedied by surgical appliances, when the child is young. Treat complications.

ACUTE RHEUMATISM.

Synonyms.—Rheumatic fever; acute articular rheumatism; inflammatory rheumatism.

Definition.—An acute, general disease, recognized by fever, temporary inflammatory symptoms in one or more joints, involved successively, and frequent endocardial and pericardial inflammation.

Etiology.—Exposure to cold and wet; bad hygiene and

improper clothing. It often complicates scarlatina and pregnancy. Most common in adults. Rheumatic tendency is often *hereditary*.

Symptoms.—*Onset* is sudden with a rigor or chill, followed by a rise of temperature to 100° or 104° F.; nausea or vomiting, and soreness in one or more of the large joints. Other cases begin slowly with anorexia, slight headache, and fever, followed in a few days by soreness in one or more of the joints. Begins in the shoulder, wrist, knee, or ankle joint, and spreads until all or most of the large joints are involved. The affected joint is bright red, swollen, and extremely sensitive to the slightest touch, jar, or movement. An effusion can be detected in the joint. The sheaths of the tendons near the joint often inflame. This inflammatory process may be very slight, and subsides in a few days; or it may be very severe, and terminates in resolution in several weeks, with temporary or permanent stiffness of the joint.

Fever varies with the number of joints involved and the inflammatory action. In simple cases it is about 102° F., and declines by lysis, after many remissions, in one week to ten days. *Hyperpyrexia* (106° to 110° F.) in complicated cases, and may continue high for several weeks. Profuse, exhausting, sour-smelling, acid sweats; insomnia; tongue is broad, flabby, and covered with a thick white coating; *urine* is scanty, high-colored, acid, and loaded with urates. There may be an *eruption* of sudamina, small red papules, or miliaria. Rheumatism is prone to relapses, and one attack predisposes to another.

Complications.—*Acute endocarditis* is recognized by an increase in fever; slight or severe præcordial pains; rapid pulse; a soft bruit heard at the mitral or aortic valve, during systole, and an increase in the time between systole and the radial pulse. It may be slight and disappear in a few days; may be severe and terminate in death or chronic heart-lesions.

Acute pericarditis is not very common, but is recognized by increased fever and pulse-rate; præcordial tenderness and pain; dullness on percussion during stage of effusion, and friction-sounds on oscultation.

Single or double pleurisy is not uncommon. Pneumonia is the exception. Bronchitis and tonsillitis are often present.

Pathology.—There is a great difference of opinion as to the true cause of rheumatism. There is always an excess of *lactic acid* in the blood, caused by an improper chemical change in the albumins, which are normally decomposed into carbon dioxide and urea. The nervous involvement is not understood. The synovial membranes of the joints are swollen, engorged, and covered with a plastic lymph. Synovial spaces are filled with a turbid, thin synovial fluid, rich in albumins, shreds of fibrin, and leucocytes. The viscera present pathological lesions as affected. Late investigation tends to show that it is due to a specific germ not yet satisfactorily demonstrated.

Diagnosis.—*Gonorrhæal rheumatism* is accompanied by a gleet discharge from the urethra; no fever or heart-complications; attacks one joint, and is very obstinate.

Pyæmia has a history of pyæmic infection; hectic fever; involves one joint, which suppurates.

Prognosis.—Most cases recover. Death may result from hyperpyrexia, cardiac complications, or pleurisy.

Treatment.—Put patient in bed at once, and if pain is severe, administer a hypodermic injection of morphina and atropina for temporary relief. A free saline or drastic cathartic should be given and caused to act freely. Put the joints at rest, and wrap them in *raw, oily cotton*. Some prefer the application of stimulating poultices, cold applications, sinapisms, blisters, or lead-water and laudanum (U. S. P.) to the affected joints. Ichthyol ointment (ten percent.) is soothing to the joints. Keep joints covered with *raw cotton* through the

whole disease. Salicylate of soda, ten to twenty grains every four hours, is the best remedy for pain and fever, and may be given continuously, watching its physiological effects. Salicylic acid, *salol*, or salicin may be given.

R

Sodii salicylatis 3vj.
 Sodii bicarbonatis ℥ij.
 Syr. limonis..... f℥ss.
 Aquæ.....q. s. ad. f℥iv.

M. Signa. One teaspoonful every two or four hours.

Acetanilide, gr. v-x, every three hours; phenacetin, gr. v-x, every three hours; or pill acetanilide comp. (p. 27), every hour, gives speedy relief to pain and fever. In hyperpyrexia use cold baths freely. *Cascara sagrada*, combined with the salicylates or given alone, is an excellent remedy.

R

Ext. cascarae sagradae fluidi..... f℥v.
 Sodii salicylatis..... 3vj.
 Syr. aurantii rubri f℥ss.
 Aquæq. s. ad. f℥iv.

M. Signa. One teaspoonful every three or four hours.

One-drop doses of tr. bryonia and tr. rhus toxicodendron, every one or two hours, are beneficial.

Alkaline Treatment.—Administer full doses of some alkali—potassii bicarbonas—until the urine is alkaline or neutral in reaction, and maintain it in this condition until a cure is effected. Quinine is advantageous in tonic doses only. When fever subsides and convalescence begins, administer tonics of iron and quinine, hypophosphites, malt or cod-liver oil.

Diet should be light and farinaceous; avoid the red meats and albumens. Stimulating food is required during convalescence.

GONORRHOEAL RHEUMATISM.

Description.—A complication occurring in the second or fourth week of gonorrhœa, closely resembling acute rheumatism and very obstinate to all treatment. One or more joints are painful, red, and swollen for a few days, until the disease finally locates itself in the elbow, wrist, knee, or ankle joint. Joint is much swollen, very painful, red, and the surrounding tissues are also inflamed. There is very slight fever or constitutional disturbance. It persists much longer than acute rheumatism and resists all ordinary treatment. The joint may be permanently impaired, or recovers after a long time.

Treatment.—*Oleum gaultheria*, in full doses, three or four times daily, gives best results in acute cases. Salicylates and coal-tar derivatives are of little use. In *subacute and chronic cases*, full doses of the syrup of the iodide of iron, syrup of hydriodic acid, iodide of potassium, or protiodide of mercury. Tonics of iron, quinine, phosphites, and cod-liver oil. Local applications of tincture of iodine, ichthyol ointment (ten to twenty percent.), sinapisms, or blisters. Local sedatives may be necessary in acute cases. Keep parts at rest. When inflammatory symptoms disappear, use massage, electricity, and inunctions of hot cod-liver oil.

POLYURIA.

Synonym.—Diabetes insipidus.

Description.—Polyuria is recognized by an abnormally large amount of pale, non-albuminous, non-saccharine urine. It may be hereditary; is most common in children, young adults, and males. It may depend upon drinking large quantities of liquids, diuretics, exposure, injuries to the nervous centers, fright, anxiety, debility, syphilis, malaria, and cerebral

tumors. Many think it is due to an irritation of one of the centers near the floor of the fourth ventricle of the brain. Patient has an unnatural thirst; mouth and tongue dry; hard, scaly skin; constipation; an insatiable appetite; nervousness and irritability; headache and dullness of intellect. Loss of flesh and impairment of health follow, if of long duration.

The characteristic symptom is the *urine*, which varies in amount from four to thirty quarts in twenty-four hours; is pale and clear; acid in reaction; specific gravity of 1.001 to 1.006; daily excretion of urea is increased; sugar and albumin usually absent. It pursues an irregular course, and the prognosis varies with the cause. Death is the result of complications. Permanent cures are not the rule.

Treatment.—Establish activity of the bowels with salines. Let *diet* be nourishing and not too stimulating. If tonics are demanded, none are better than strychnine, iron, and arsenic. Endeavor to limit the amount of liquids taken by allowing the patient small amounts at frequent intervals. Ergot, pilocarpine, hydrochloric acid, galvanism, and bromides have been used with varying success. In specific cases mercury and iodides are indicated as given in syphilis. The curability of each case will depend upon the removal of its cause. Patients of this class must avoid a sedentary life and live out-doors as much of the time as possible. Salt baths should be taken two or three times each week.

DIABETES MELLITUS.

Synonyms.—Diabetes; glucosuria; melituria.

Definition.—A general diathetic disease, which pursues an uncertain course, and is recognized by polyuria, glucosuria, great thirst, emaciation, weakness, and a great susceptibility to acute diseases.

Etiology.—Most common in men after the twenty-fifth year, and in blondes. May be hereditary. Excesses in malt liquors, starches, and sugars may cause it; venereal excesses; irritation of the nervous centers; and cerebral injuries.

Symptoms.—*General.*—Onset may be so gradual that it escapes notice. There is a tendency to drink large quantities of water; *frequent urination* and passage of large quantities of urine each time; frequent urination at night; *great thirst*; mouth, tongue, and throat are dry, parched, and red; *skin* is harsh and dry; sweet taste in the mouth; constipation; increased appetite; nervousness; and great weakness. *Emaciation* progresses, but may be absent in many cases for a long time. Perspiration causes great irritation and itching of the skin. In males there is intense irritation of the head of the penis; and in women, extreme pruritis vulvæ. There is a tendency to the formation of *carbuncles* and *boils*. Gangrene of one or more extremities may occur. Great predisposition to pneumonia, tuberculosis, and ocular defects. Toward the close of the disease *diabetic coma* may occur, and often causes death.

Coma begins by a diminution of the amount of urine and sugar passed; some abdominal pain; obstinate constipation; extremities are cold and blue; heart is weak; indifference to all surroundings; comatose, but can be roused with difficulty; sighing and unsatisfactory respiratory efforts; and, rarely, convulsions. It may continue one to five days, and ends in death. Symptoms of Bright's disease may complicate or develop.

Urine varies in amount from two to twelve quarts in twenty-four hours, and is pale and clear; specific gravity, 1.025 to 1.045; has a sweetish odor and taste; *acid* in reaction; urea, phosphates, and sulphates are increased; acetone, aceto-acetic acid, or beta-oxybutyric acid are present. When evaporated at a low temperature, *glucose* may be obtained in distinct crystals. *Grape-sugar* or *glucose* is always present, and varies in

amount from a mere trace to ten grains to the ounce. As much as seven thousand grains may be excreted in twenty-four hours. It is detected qualitatively, as indicated under urinary tests.

QUANTITATIVE TESTS FOR GLUCOSE.

Fermentation Test.—Take a definite quantity of urine (f $\frac{5}{8}$ iv); add to it a small particle of compressed yeast, and accurately note its specific gravity and the temperature at the same time. Put it in a warm place for twenty-four hours or longer until fermentation is complete. Accurately note the specific gravity of the fermented specimen at the same temperature as originally taken. Each degree of specific gravity lost corresponds to one grain of sugar to the ounce of urine.

Fehling's Volumetric Test.—Ten cubic centimeters of Fehling's solution are mixed with forty cubic centimeters of water, and brought to the boiling-point. Mix one part of urine with nine parts of water, and cautiously add this, drop by drop, to the boiling Fehling's solution. When the solution is entirely *decolorized*, the calculation can be made from the fact that ten cubic centimeters of Fehling's solution are decolorized by 0.05 grams of glucose. Measure the amount of urine used to decolorize the ten cubic centimeters of Fehling's solution, and calculate.

Pathology.—No definite pathological process has been determined. Among theoretical causes is found some irritation of the central nervous system in the region of the floor of the fourth ventricle of the brain; pathologists have produced glucosuria by puncturing the floor of the fourth ventricle in animals. Others claim that there is an interference with the glycogenic function of the liver. No pathological lesion of the kidneys can account for it. The liver and kid-

neys may be congested, degenerated, or hypertrophied. No definite nervous lesions have been found.

Diagnosis.—The mere trace of a small quantity of sugar, found once or twice, does not diagnosticate diabetes; for temporary, *functional glucosuria* can be produced by eating asparagus and sugar, or drinking excessive quantities of malt liquors. It may also be present after anæsthesia by ether or carbonic-oxide gas; after taking toxic doses of hydrocyanic acid, curari, morphina, or mercury; after chorea, typhoid and typhus fevers, or diphtheria. Unless symptoms are typical and a large amount of sugar is demonstrable, do not make a hasty diagnosis.

Prognosis.—*Acute diabetes* may terminate fatally in a few weeks or months with diabetic coma. *Chronic cases* may run for many years, with occasional remissions. About one half of the cases die in a few years from coma. A large percentage die of pneumonia or phthisis, and the remainder of Bright's disease and other affections. Pregnancy always increases the symptoms; premature labor and death of the foetus are common,

Treatment.—*Hygienic.*—Active business cares must be reduced to a minimum, and an out-door life followed. *Clothing* must be light-weight, all wool, and appropriate to the season. Avoid taking cold and exposure to contagious diseases. If not contraindicated, take a weak, tepid salt-water bath daily, to be followed by rubbing. Exercise must be moderate, regular, and restricted. Must avoid all gaseous, smoky, or close rooms; retire early and sleep late. Observe scrupulous cleanliness of the privates. Unless a physician's directions are followed to the letter, treatment will avail nothing. Strict dietary lines must be drawn and followed.

Dietary Treatment.—*Avoid* the following articles of diet: all forms of sugars and starchy foods, such as white bread, ordi-

nary brown bread, cornmeal, oatmeal, rice, tapioca, arrowroot, sago, macaroni, farina, potato, turnips, parsnips, carrots, pease, cabbage, beans, tomatoes, beets, and all kinds of fresh and preserved fruits; also liver, oysters, Devonshire cream, large quantities of milk, all forms of malt liquors, sweet wines, and sweetened drinks.

Allow any of the following for variety: greens, water-cress, onions, spinach, the green leaf of lettuce (not the white stem), cucumber, radishes, celery, with dressings of mustard, vinegar, oil, or butter. May use cheese, cream (Devonshire excepted), any form of meat except liver; game, poultry, eggs, fish, beef-extracts, and soups that are not thickened with white flour or starch; turtle-soup and unsweetened jellies; gluten-bread, almond-flour bread and rolls, bran-bread and rolls, custards without sugar. As *drinks*, allow pure water, soda and mineral waters, tea, chocolate, coffee, or cocoa, without sugar, but with cream; dry sherry wine, claret, brandy, or whisky. A small amount of milk or oysters can be given occasionally, but may have to be discontinued. Dr. Solis-Cohen allows lævulose or fruit-sugar in moderation, carefully watches the urine, renders the blood alkaline, and keeps bowels active with phosphate of soda.

Medicinal Treatment.—Opium and its derivatives seem to diminish the tendency to the formation of glucose, and may be given in small doses three or four times daily. Carbonated, alkaline waters, carbolic acid, bromides, dilute nitric acid, and almost every drug have been used without avail. Tonics of iron, arsenic, strychnine, and cod-liver oil. Local irritation of the skin and privates must be met by cleanliness and applications of boric acid, oxide of zinc, and aristol. *Coma* will not often respond to active treatment, but free stimulation and warmth are indicated. Meet complications. Nitrate of pilocarpine, gr. $\frac{1}{60}$, three times daily, for the great thirst.

DISEASES OF THE CIRCULATORY SYSTEM.

DISEASES OF THE HEART.

Normal Anatomy and Physiology.—The *heart* is a hollow, conoidal, muscular organ, that acts as a force-pump in keeping up the normal circulation of blood. It is placed obliquely between the lungs, with the apex directed downward to the left, and base upward toward the right. *Weight* is from eight to ten ounces. About five inches long and three inches across the base. Is about the size of the individual's closed fist. It consists of muscular fibers, arising from the aortic and auriculo-ventricular orifices, arranged by a vortex motion in two layers, with looped and annular fibers, inclosing two auricles and two ventricles, each receiving certain vessels that are protected by valves.

Inspection shows slight fullness over heart-area in some subjects; impulse of apex-beat, in fifth intercostal space to inner side of left-nipple line—changed by position, forced respiration, and physical condition.

Palpation.—Detect impulse of heart; rhythm; abnormal thrills or friction râles.

Percussion.—A greater portion of the heart is covered by the lung, but præcordial dullness is elicited in a space bounded superiorly by upper margin of fourth costal cartilage; internally, by left border of sternum; inferiorly, by upper margin of sixth costal cartilage; externally, by a perpendicular line

one inch to inner side of left nipple. Dullness is affected by emphysema; cardiac hypertrophy; excessively thick chest-walls; pericardial and pleural effusions.

Auscultation.—*Mitral*, or bicuspid, *valves* are placed between the left auricle and left ventricle; open into left ventricle, and their action is best heard during systole, at apex-beat of heart, in fifth intercostal space to the inner side of a line with left nipple.

Tricuspid valves, between the right auricle and right ventricle, opening into right ventricle, best heard during systole, one inch to right of ensiform cartilage.

Aortic valves, between great aorta and left ventricle, opening into aorta, best heard one inch to right of sternum, in second intercostal space, during diastole.

Pulmonary valves, between pulmonary artery and right ventricle, opening into pulmonary artery, best heard during diastole, in second intercostal space to left of sternum.

The *normal sounds* of the heart are two in number and are termed *systole* and *diastole*. *Systole*, or first sound, is produced by closure of mitral and tricuspid valves; contraction of heart-muscle and impact against chest-walls; opening of aortic valves and rush of blood through aortic opening. A long, dull sound.

Diastole, or second sound, due to closure of aortic and pulmonary valves; opening and rush of blood through tricuspid and mitral openings; and dilatation of the ventricles. This sound is shorter than the first, abrupt and ringing. Immediately following diastole is a short period of repose, during which the heart-muscle rests.

CARDIAC MURMURS.

General usage accepts the term "cardiac murmur" to apply to any abnormal sound other than the normal rhythmical sounds of the heart. Murmurs are (1) functional or (2) organic.

(1) *Functional Murmurs*.—Always systolic; soft in character, and best heard over the base of the heart. Due to excitement; violent exercise; unequal tension of chordæ tendineæ; and abnormal conditions of the blood, as in anæmia and septic fevers.

(2) *Organic Murmurs*.—1. Obstructive. 2. Regurgitant. These are harsh, rough sounds, replacing the normal sounds; not limited to one spot, but best heard over affected valve-area.

Systolic murmurs are always caused by blood flowing from ventricles.

Diastolic murmurs are caused by flow of blood into the ventricles.

TABLE OF CARDIAC MURMURS.

TIME.	AORTIC VALVE. MITRAL VALVE.		TRICUSPID VALVE.	PULMONARY VALVE.
Systolic murmurs.	Aortic stenosis.	Mitral insufficiency.	Tricuspid insufficiency.	Pulmonary stenosis.
Diastolic murmurs.	Aortic insufficiency.	Mitral stenosis.	Tricuspid stenosis.	Pulmonary insufficiency.
Presystolic murmurs.		Mitral stenosis.	Tricuspid stenosis.	
Center of sound.	Second inter-costal space; right margin of sternum.	Apex-beat.	Over ensiform cartilage; right border.	Second inter-costal space; left margin of sternum.

CARDIAC HYPERTROPHY.

Synonym.—Hypertrophy of the heart.

Definition.—A pathological condition of the walls of the heart, recognized by an increase in their muscular elements and usually localized to one portion.

Etiology.—Any cause that increases the normal amount of work thrown upon the heart. Over-stimulation by alcoholic drinks, coffee, tea, tobacco, and other stimulants; plethora; excessive exercise; constant excitement; organic valvular lesions; lung-diseases, such as emphysema, tuberculosis, and chronic pneumonia; Bright's disease of kidneys, any obstruction to general circulation; endarteritis. Most common in males.

Symptoms.—Full, tense, bounding pulse; flushed face; veins congested; mucous membranes red and swollen; conjunctival vessels injected; dizziness; ringing noises in the ears; headache is frequent; epistaxis; disordered digestion; and pulsating carotids. Heart beats regularly; not associated with pain, but attacks may occur; palpitation rare; dyspnoea, and slight, dry cough.

Præcordial region prominent; strong cardiac impulse; lowered apex-beat, nearer median line; percussion dullness increases laterally. Systole is prolonged and not as clear as in health. Symptoms of causative disease.

Pathology.—Hypertrophy of the heart-muscle is caused by over-activity. This causes over-nutrition or extra supply of blood and an increase in the number and size of muscle-cells, giving rise to three varieties: 1. *Uniform increase* of the whole heart or cardiac walls, without alteration of cavities. 2. *Concentric hypertrophy*, in which heart-walls are thickened and cavities diminished in size. 3. *Eccentric hypertrophy*, in which walls are thickened and cavities dilated. Left side of heart is

most commonly affected. Weight of heart increased, hence displaced downward toward median line. Shape varies according to part affected. So long as hypertrophy continues, it is termed *compensatory hypertrophy*; but when compensation fails and the heart-muscle has reached its hypertrophic limit, degeneration sets in, with dilatation. *Partial hypertrophy* is always due to mechanical obstruction.

Prognosis.—Great danger lies in failure of compensation; fatty degeneration; dilatation; cerebral apoplexy; cerebral aneurisms; and pulmonary hyperæmia. Simple cases, under proper care, do not necessarily shorten life.

Treatment.—*Dietary.*—*Discontinue* use of alcohol, tobacco, coffee, tea, red meats, condiments and stimulants of all kinds. Give parched pease; whole wheat, boiled; vegetables; fish; small amount of milk; and limit amount of liquids taken. Take plenty of time for meals, and *never eat enough to fully satisfy the appetite*. When secondary organic lesions are present, diet as indicated by symptoms.

Hygienic.—Must lie down after dinner, and never exercise after a meal. *Avoid* every exertion and excessive, violent, or sudden exercise, constipation, and every condition that will disturb the circulation through the lungs and abdomen. Moderate exercise; massage. Proper hygiene and diet will accomplish more than medicines in most cases.

Medicinal.—When heart is full, tense, and bounding, with threatened cerebral hyperæmia, give full doses of tr. aconiti or tr. veratri viridis; or, in extreme cases, venesection; but the latter procedure brings the patient one step nearer fatty degeneration. Constant administration of aconite or veratrum, in small doses, or bromides, three or four times daily, with proper hygienic and dietary measures. *When compensation fails*, must resort to best stimulating diet and cardiac stimulants as given in dilatation. Symptomatic treatment.

CARDIAC DILATATION.

Synonym.—Dilatation of the heart.

Definition.—A pathological condition, in which one or more cavities of the heart are increased in size, and always dependent (a sequela) on some other diseased condition.

Etiology.—Valvular insufficiency or stenosis; increased blood-pressure on weakened heart-walls, due to any obstruction in the circulation; over-stimulation; failure of compensation in hypertrophy; fatty degeneration; myocarditis; fibroid and granular degeneration, following anæmia; chlorosis; old age; gout; rheumatism; improper innervation. Accompanies fevers as a functional dilatation.

Symptoms.—*General venous congestion*, with superficial veins prominent; skin bluish; œdema of ankles at night; liver enlarged; bowels constipated; frequent attacks of palpitation; chilly sensations; dyspnœa; constant cough; hearing rather dull; dull headache; vertigo; tongue coated. *Pulse* weak, feeble, often fluttering, and easily compressed. *Urine* frequently albuminous, red, and scanty. *Dropsy* gradually increases, and becomes permanent. *Auscultatory sounds* feeble and pure, or are replaced by a murmur. *Percussion dullness*, increased to right of sternum; apex-beat slightly lowered. Œdema of lungs, cardiac paralysis, and erysipelas are frequent causes of death.

Pathology.—That of cause. Heart enlarged, mostly over right ventricle, and walls often as thin as tissue-paper. Dilatation is (1) *simple*, with increased capacity of cavities without alteration of walls; (2) *that of increased capacity with thinning of walls*; (3) *that of increased capacity with hypertrophy of walls*. Heart-muscle is soft, pale, flabby, and easily ruptured. Venous congestion causes dropsy and hyperæmia of different organs.

Diagnosis.

CARDIAC DILATATION.	CARDIAC HYPERTROPHY.	PERICARDIAL EFFUSION.
History of valvular disease, obstructed circulation, or hypertrophy.	History of increased cardiac action.	History of acute pleurisy.
Weakened circulation.	Over-active circulation.	Circulation not markedly disturbed.
No friction-sound.	No friction-sound.	Friction-sound at apex.
Dullness irregular.	Dullness irregular.	Triangular dullness, base down.
Dropsy and venous congestion.	May be dropsy and venous congestion.	No dropsy or venous congestion.
Auscultatory sounds clear and sharp; slight weakness.	Sounds are strong, clear and sharp.	Sounds feeble at apex.

Prognosis.—*Cure is impossible.* When fatty degeneration occurs, death soon supervenes. Great danger lies in fatty degeneration; dropsy; venous congestion of lungs or brain; erysipelas; paralysis or rupture of the heart.

Treatment.—In all cases of dilatation *the object in treatment is to prevent fatty degeneration*, which is due to innutrition. To this end keep the blood as rich as possible, lessen the heart's work, and insist on absolute rest for a time. *Dry diet.* Avoid all hard exercise; excitement; shock; sudden change of posture; overloading the stomach; imbibing large quantities of hot or cold drinks, as these increase arterial tension and may cause rupture of the heart.

Diet of eggs, milk, oils, butter, fish, grated or scraped beef, rice, fruits, vegetables, and predigested foods, if indicated. Phosphates and lactophosphates of lime, iron, cod-liver oil, and arsenic, for anæmia. Massage, in the lying posture, never continued longer than fifteen minutes at any one time. Medium walks, a little short of patient's endurance. Inhalations of compressed air or oxygen, and uniform climate. *Alcohol must be avoided*, as its stimulating action is only temporary. When

dropsy is marked resort to saline cathartics, diuretics, and diaphoretics—always watching the heart. Pulv. digitalis fol., gr. $\frac{1}{4}$ to 1, ter die, or infusum digitalis, f $\frac{5}{8}$ ss, morning and evening, is the best remedy to stimulate the heart. It stimulates the heart, empties the veins, diminishes venous congestion, forces blood into the arterial system, and acts as a diuretic. When accompanied by trinitrin, gr. $\frac{1}{60}$, ter die, the untoward effect of contracted arterioles is overcome. *Alternate* digitalis with tr. strophanthus, to prevent cumulative action. *Strychnina* is the most valuable, continued stimulant and stomachic tonic. Caffein, adonis, convallaria, sparteine, and barium chloride all stimulate, but not as satisfactorily as the others mentioned.

FATTY DEGENERATION OF THE HEART.

Definition.—A pathological process, in which the normal proteid matter of the muscular and fibrinous cells of the heart is replaced by oil or fat globules.

Etiology.—Old age; anaemia; scurvy; phthisis; cancer; phosphorus, antimony, arsenic, and lead poisoning; septic fevers; myocarditis; innutrition from obstructed coronary circulation. A sequela of hypertrophy.

Symptoms.—Cardiac impulse feeble; pulse weak and compressible; precordial dullness, increased if dilatation is present; rhythm regular or irregular; syncope; dyspnoea; Cheyne-Stokes breathing; oedema of lower extremities; venous congestion; diminished appetite, with gastric disturbances; dry cough; loss of flesh; constipation. Late in the disease, marked dropsy, and death by heart-failure, rupture, or syncope. Attacks of angina pectoris frequently complicate. *Arcus senilis* present in old persons. *Arcus senilis* is a fatty degeneration

of the margin of the cornea, and is present in the form of a small ring around the whole circumference.

Pathology.—A *true fatty degeneration* of the heart-muscle is caused by improper nutrition. The proteid matter in each muscular cell atrophies, degenerates, and is replaced by globules of fat and oil. Muscular striæ are obliterated or indistinct. Whole organ is soft; friable; dirty-yellow color; very greasy and oily. Ventricle and auricle frequently dilated. Coronary arteries degenerated and often calcareous.

Diagnosis.—*Fatty infiltration* is not a degenerative change, but a deposit of fat around and between the muscular cells. Heart-cavities not dilated; different history of onset in people who eat rich food and take little exercise.

Prognosis.—Very bad. Most cases die, except those occurring during an acute illness.

Treatment.—Identical with cardiac dilatation. Strychnina is the best stimulant for prolonged administration.

MYOCARDITIS.

Description.—Inflammation of the heart-muscle, acute or chronic, is due to endocarditis, pericarditis, or septic fevers, and is so obscure that a *positive diagnosis during life cannot be made*. It ends by resolution or suppuration. Great pain over heart; irregular fever; septicæmia or pyæmia; pulse weak and irregular; rigors; spleen and liver swollen; and *general typhoid condition*. *Post-mortem*, heart is soft, infiltrated with pus or serum, or contains sinuses or abscess-cavities, inclosed or ruptured into pericardial sac or cavities of the heart. Most cases terminate in death in less than one week.

Treatment.—*Symptomatic and supporting*, with absolute rest in bed. No positive diagnosis: no positive line of treatment.

ACUTE ENDOCARDITIS.

Definition.—An acute inflammation of the endocardial serous membrane, accompanied by a fibrinous or serofibrinous exudation, interfering with the normal functional activity of the heart.

Etiology.—Acute articular rheumatism; Bright's disease of the kidneys; gout; acute fevers; diphtheria (diphtheritic or ulcerative endocarditis). Accompanies pleurisy, pneumonia, pericarditis. May be *congenital* or *idiopathic*.

Symptoms.—Disease runs such an insidious course that no definite period of onset can be fixed—the *first indication* showing itself in cardiac murmurs. *Pain is not a constant symptom* of endocarditis; may be functional derangement of heart; pulse rarely increased in volume, but is increased in number of beats; tendency to venous stasis. Before valvular murmurs are manifest the disease can be diagnosed by a peculiar *lengthening of the period between the heart-beat and radial pulse*, from the normal of one-eighth second to one-quarter second. Heart-action tumultuous. May have slight dyspnoea; gastric irritation; cough and increased temperature. *Auscultation* reveals murmurs at apex-beat or aortic valves, with first or second sound of heart, or both. Disease subsides by lysis in one to three weeks, or assumes a chronic course. Sudden paralysis indicates embolism.

Ulcerative endocarditis runs a very acute course, with marked valvular murmurs; high temperature, 105° to 106° F.; septic embolism; delirium; great prostration; and usually terminates in death or chronic endocarditis.

Pathology.—*Simple Endocarditis.*—An irritant, probably some poison in the blood, causes hyperamia of the endocardium in the left side of the heart usually, followed by swelling

of the membrane and a fibrinous or serofibrinous exudation. The whole membrane is rarely affected, but the inflammation is limited to a part. Valves of the heart, being formed by reflected folds of the endocardial membrane, become thickened and swollen, and with the disturbed function of the chorda tendineæ and columnæ carneæ allow regurgitation and valvular murmurs. Edges of valves are rough, and cause accumulation of fibrinous clots (vegetations) that remain permanently or are washed into the general circulation, causing *embolism*. Valves become adherent to each other and surrounding structures.

Ulcerative Endocarditis.—Diphtheritic or pyæmic in origin, and due to a germ which causes inflammation, ulceration, destruction of valves, and thickening of orifices.

Diagnosis.

ACUTE ENDOCARDITIS.

Distant, soft, blowing sound.
Heart-sounds distinctly heard.
No pericardial dullness from effusion.
Strong heart-impulse.
Time of radial pulse delayed.
Little præcordial pain.

ACUTE PERICARDITIS.

Rough friction-sound, near the ear.
Heart-sounds indistinctly heard.
Increased heart-dullness from pericardial effusion.
Weak, wavy impulse.
Time of radial pulse normal.
Severe præcordial pain.

Prognosis.—*Simple endocarditis* rarely causes loss of life, and terminates in recovery by lysis in one to three weeks, or becomes chronic. Vomiting, hæmatemesis, albuminuria, or embolism are bad signs. *Septic or malignant endocarditis* is almost certainly fatal.

Treatment.—Remedies, aimed directly at endocarditis as a simple disease, fail. Remembering its cause, *treatment must be directed against the primary disease*—rheumatism, Bright's disease, and others mentioned; best hygienic and dietary measures; absolute rest in bed; and general symptomatic

treatment. Digitalis or aconite, as indicated by the heart. Ammonii carbonas aids in absorption, and prevention of valvular vegetations and emboli. Ice over præcordial region for tumultuous heart. Leeches and blisters.

CHRONIC ENDOCARDITIS.—VALVULAR DISEASES.

Description.—Chronic inflammation of the endocardium, most common in the left side of the heart, is the result of acute endocarditis, and gives rise to organic lesions in the valves and heart-muscle. It is recognized by the presence of harsh, continued murmurs, which replace the normal heart-sounds, and circulatory derangements. Heart-murmurs are caused by valvular insufficiency (*regurgitant murmurs*) or stenosis (*obstructive murmurs*). See table, page 121.

Insufficiency is an improper closure of the valves, due to contraction or deformity; rupture of the segments; contraction of chordæ tendineæ; ulceration; presence of warty excrescences on valve-leaflets; or simple dilatation.

Stenosis is a narrowing of the valvular orifice from inflammatory infiltration, adhesion of segments of valves, and warty growths.

Either trouble may exist alone or be present in the same or several valves. *Compensatory hypertrophy and dilatation* are positive sequences of valvular lesions. *Congenital endocarditis* is always on the right side of heart, but is rare. *Hæmic murmurs* are soft and blowing; transmitted along the veins and arteries of the neck; best heard at the base of the heart; and accompanied by anæmia.

MITRAL INSUFFICIENCY.

Description.—Insufficient closure of the mitral valve allows blood to regurgitate into the left auricle during systole, and

prevents the normal amount of blood passing through the aortic opening. This causes a damming back of blood into the pulmonary veins and general venous system; venous congestion; arterial anæmia; hypertrophy and dilatation of the left ventricle. Lungs, liver, spleen, and gastro-intestinal tract, are in a state of chronic congestion. Chronic cough; dyspnoea; gastro-intestinal catarrh; occasional jaundice; marked anæmia; pulse irregular, delayed, and soft; hæmoptysis and hæmatemesis; blowing murmur, during systole, at apex-beat. Dropsy comes late, beginning in lower extremities and advancing upward as the tissues become loaded with serum. When compensatory hypertrophy fails patient dies from heart-paralysis, dropsy, or congestion of one or more organs.

MITRAL STENOSIS.

Description.—Narrowing of the mitral valves obstructs the normal flow of blood from the left auricle into the left ventricle during diastole; causes damming back of blood in the lungs and venous system, with same general symptoms given in mitral insufficiency. Blowing, whizzing sound heard at apex-beat, immediately following diastole or before systole (*presystolic*). Hypertrophy of left auricle and right ventricle, followed by dilatation and death.

AORTIC INSUFFICIENCY.

Description.—Insufficiency of the aortic valves allows regurgitation of blood from the great aorta into the left ventricle of the heart during diastole; causes venous congestion; hypertrophy of the left ventricle; *dicrotic, water-hammer, or Corrigan pulse* (a full beat which rapidly declines, giving a sensation of a double pulsation); *pulsating carotids* and reti-

nal vessels ; headache ; flushed face ; tinnitus aurium ; anemia ; strong and full cardiac impulse ; increased transverse dullness from hypertrophy. First sound clear, and second sound replaced by a blowing murmur or thrill, best heard at the second intercostal space to right of sternum. When compensatory hypertrophy fails there is dilatation, cough, dyspnoea, general dropsy, congestion of internal organs, and sudden death.

AORTIC STENOSIS.

Description.—Aortic obstruction prevents blood from flowing freely from left ventricle into the great aorta during systole ; causes damming back of blood, with hypertrophy of left ventricle, venous congestion, and the train of symptoms given. Pulse rises slowly. Arteries are comparatively empty, causing anemia, with syncope (often fatal) and vertigo. Whizzing, harsh murmur replaces systole and best recognized at second intercostal space to right of sternum, or transmitted along the carotids. Disease is most commonly due to atheroma. *Death occurs suddenly* from syncope or embolism. Disease is rarely simple, but complicates insufficiency of aortic and mitral valves.

TRICUSPID INSUFFICIENCY.

Description.—Insufficiency of the tricuspid valves causes regurgitation of blood from the right ventricle into the right auricle ; general venous congestion, with dropsy, congestion of organs, and concomitant symptoms. Usually follows mitral disease or any obstruction to pulmonary circulation that would cause dilatation of the right ventricle and enlarge this valvular orifice. Systolic, blowing murmur heard over right inferior part of sternum. *Pulsation of jugular veins* is

symptomatic—veins expand during systole. Cardiac dullness increased to the right side of the sternum, due to hypertrophy and dilatation.

TRICUSPID STENOSIS.

Description.—Obstruction of tricuspid valves is a very rare condition, and prevents free flow of blood from the right auricle into the right ventricle during systole; causes hypertrophy of the right auricle, general venous stasis, and the symptoms of tricuspid insufficiency. Murmur, presystolic, over lower right border of sternum.

PULMONIC INSUFFICIENCY.

Description.—Pulmonic insufficiency causes regurgitation of the venous blood from the pulmonary artery into the right ventricle of the heart during diastole; gives rise to dilatation and hypertrophy of the right ventricle, and general venous stasis. Congenital, or accompanies malignant endocarditis. Loud, blowing murmur at second intercostal space to left of sternum during diastole.

PULMONARY STENOSIS.

Description.—Pulmonary obstruction retards normal flow of blood from right ventricle to pulmonary artery during systole. Great dyspnoea; cough; venous stasis and congestion; cyanosis; loss of compensation; and death. Congenital; hypertrophy of right ventricle. Death occurs within a few hours after birth, but some cases have lived for years.

Treatment.—*General Hygienic and Dietetic.*—Avoid mental and physical strain; sudden motion and exertion; excitement from great joy, grief, and fright; over-loading the stomach with large quantities of food and drink; alcohol, tobacco,

coffee, tea; and the too common practice of "home remedies" and patent medicines. Encourage regular, daily, systematic exercise, short of endurance; rest in recumbent position during the middle of the day, especially after meals. Never eat a full meal, but stop before the appetite is fully satisfied. Best nutritious diet, as indicated in cardiac dilatation and hypertrophy.

As long as compensatory hypertrophy continues and no venous stasis supervenes, medicinal treatment is contraindicated, except to meet symptoms. Cardiac stimulants must be used cautiously. Bowels must be kept open by small doses of salines. Keep kidneys active by diuretics. Venesection may be necessary in certain conditions of dilatation of the right side of heart, with venous engorgement.

Stimulants.—Alcoholic stimulants and ammonia preparations act quickly for temporary relief. Digitalis, alternated with strophanthus, increases force of heart; slows its action; produces diuresis; strengthens systole and lengthens diastole.

Aortic Stenosis.—*Digitalis must be avoided*, as lengthened diastole increases the trouble. Atropinæ sulphas, gr. $\frac{1}{60}$, and strychninæ sulphas, gr. $\frac{1}{30}$, with trinitrin, gr. $\frac{1}{100}$, ter die, to increase rate and strength of cardiac contractions, to stimulate respiration and control arterial tension.

Aortic Insufficiency.—*Digitalis should be avoided*. Strychnina, atropina, caffeina, with trinitrin, are best.

Mitral Stenosis.—*Lengthen diastole with digitalis*; strengthen heart-muscle with strychnina, ferrum, and caffeina. When complicated with insufficiency, add the nitrites.

Mitral Insufficiency.—When compensation begins to fail *digitalis is the best remedy*. Alternate it with *strophanthus* to prevent cumulative effects. When blood-pressure is heightened combine trinitrin with digitalis. Treat symptomatically in all valvular lesions.

CARDIAC PALPITATION.

Definition.—A spasmodic, paroxysmal, functional, neurotic disturbance of the heart, manifested by a marked increase of its action, and dependent on some exciting cause.

Etiology.—Common in childhood; sexual disorders; hypochondriasis; over-work; excitement; fear or fright; over-loaded stomach; over-stimulation by coffee, tea, alcohol, or tobacco; obesity; gastric disorders; valvular diseases; hypertrophy; general anæmia; uterine disorders; and hysteria.

Symptoms.—*Begins suddenly* at night or at any time of day, with a violent action of the heart; a bounding impulse; dyspnœa, increased by recumbent position; præcordial oppression; great anxiety and fear of death; tinnitus aurium; flushed face; dizziness; occasional attacks of angina; pulse, full and increased. *Subsides suddenly* in five minutes, or may last for hours, followed by exhaustion and desire to sleep. Large quantities of pale urine frequently passed.

Prognosis.—Most cases are curable. When dependent on organic lesions prognosis is bad.

Treatment.—*Paroxysmal.*—Remove cause if possible. A full dose of tr. nucis vomicæ, gtt. x; tr. digitalis with belladonna; spts. ammoniæ aromaticus; brandy or ether, internally, often relieves. Severe cases are benefited by a hypodermic of morphina and atropina, with an application of ice or mustard-plaster over chest. Chloral and bromides act best when there is a marked spasmodic element present. Administer a full saline purge. *Hysterical* and *hypochondriacal patients* require full doses of valerian or asafoetida, with the application of leeches for a mental impression.

Preventive.—Avoid excitement, over-eating, sexual excesses, tea, coffee, alcohol, and tobacco; running, and ascending steps

rapidly. Treat uterine and gastric disorders. Keep bowels regular and give tonics of iron, quinine, strychnine, arsenic, and cod-liver oil. Best diet, in small quantities; regulate hygiene. Seek for and remove every possible cause.

ANGINA PECTORIS.

Synonym.—Cardiac neuralgia; neuralgia of the heart.

Definition.—A paroxysmal neurosis, recognized by intense, sharp pain and oppression in the precordial region, with a sensation or conviction of impending death.

Etiology.—*Exact cause unknown.* Associated with calcareous degeneration of the coronary arteries and fatty degeneration of the heart. Hereditary; hysteria. Sometimes complicates valvular and aortic disease. Attacks are excited by worry, excitement, cold, exhaustion, and sickness.

Symptoms.—*Onset* is sudden, with violent, stabbing or darting pain over the heart, radiating to the back of the left shoulder, neck, and inner side of the left arm, to a point a little below the elbow. Patient assumes a sitting or erect position; sensation of strangling or oppression over chest; skin cold and bathed with perspiration; face pale; occasional syncope; respiration hurried; vomiting at times; great anxiety and fear of sudden death. Heart's action rarely increased. In five to thirty minutes *paroxysm subsides suddenly*, leaving patient exhausted, weak, and nervous. The sensation of pain experienced was expressed by a patient, "as if the heart were being tightly squeezed in a vise." Paroxysms may occur once in three months or, in severe cases, daily.

During the interval there are no symptoms of any consequence, no pain, and general good health. Nervous symptoms develop late, and may terminate in epilepsy, insanity, or death.

Pathology.—*Exact pathology is unknown.* Is commonly associated with disease of the coronary arteries and accompanied by fatty degeneration of the heart. Pain is due to a disturbance of the terminal filaments of cardiac plexus, the pneumogastric and phrenic nerves, and is reflected to the left arm through their sympathetic connection with the intercostohumeral and nerve of Wrisberg.

Diagnosis.—*Intercostal neuralgia* has slower onset; less pain; tender points along the course of the nerve; no cardiac disturbance, sensation or fear of impending death; does not subside suddenly; never causes death.

Cardiac epilepsy, although accompanied by great pain, has characteristic muscular twitchings, epileptic aura, and loss of consciousness. *Pain always follows loss of consciousness.*

Prognosis.—Always grave. Death may occur during the paroxysm.

Treatment.—*Paroxysmal.*—*Prompt inhalation of three or five drops of amyl nitrite* gives most speedy relief. Hypodermic injection of morphina and atropina; ether internally; trinitrin and stimulants of brandy or ammonia. *Avoid inhalations of chloroform* on account of its fatal tendency to depress the heart and paralyze respiration.

Preventive.—*Avoid* every possible cause, such as excitement, fright, anger, over-eating, excessive exercise, and indoor life. Remove any suspected cause; live in open air; best diet; institute regular habits; tonics of iron, arsenic, quinine, strychnine, and digitalis. *No specific*, except it be hygienic and dietetic measures.

EXOPHTHALMIC GOITER.

Synonyms.—Exophthalmos; Graves's disease; Basedow's disease.

Definition.—Extreme irritability of the heart, complicated by enlargement of the thyroid gland and marked protrusion or prominence of the eyeballs.

Etiology.—No assignable cause. Most common in women between the ages of fifteen and thirty-five. May follow direct injury or neurotic troubles. Hereditary.

Symptoms.—*Onset* is very slow. *Heart* is irritable, and as the disease progresses beats forcibly and quickly, as in hypertrophy; area of impulse increased; pulsation of carotids; pulse from eighty to one hundred and forty per minute; dyspnoea on exertion; attacks of palpitation.

Following disturbed circulation, *both eyeballs become prominent and staring*; the eyelids fail to meet, thus causing keratitis and ulceration. Upper eyelid and eyeball do not move uniformly. Accommodation not affected.

Thyroid gland enlarges symmetrically and pulsates, imparting a thrill to the touch. Systolic murmur heard over the gland; loss of appetite and health; headache; vertigo; hysterical attacks; slight fever; cough, increased by pressure of goiter. Occasional aggravation of all symptoms.

Pathology.—No positive pathological process has been found or explained by pathologists. The *goiter* is vascular; uniformly enlarged; may contain cysts or new fibrous tissue. *Exophthalmos* may be due to venous congestion, increase of fatty tissue in the orbit, or contraction of the involuntary muscular fibers supposed to line the orbit over the sphenomaxillary fissure. Disease is probably central in origin.

Prognosis.—Mild cases may recover entirely, partially, or remain stationary for years. *Death* is due to heart-disease, exhaustion, or heart-failure.

Treatment.—*No specific.* When cardiac stimulants are indicated give digitalis, belladonna, or strychnine. Aconite and veratrum when depressants are indicated. Ergot is of doubt-

ful utility. Mild galvanism over the sympathetic nerve or the eyes may be beneficial. Applications of ice over the goiter or præ-cordial region when heart is irritable. Bandages applied over the eyes may lessen the exophthalmos. Trinitrin has been recommended. General symptomatic and hygienic treatment. A principle derived from the thyroid gland is now being used experimentally with some promise of good results.

DISEASES OF THE PERICARDIUM.

PERICARDITIS.

Definition.—An acute or chronic inflammation of the pericardial serous membrane, accompanied by a serofibrinous exudation, and in some cases an effusion of serum into the pericardial sac.

Etiology.—Accompanies rheumatism, Bright's disease of the kidneys, tuberculosis, septic diseases, pneumonia, pleurisy, erysipelas, epidemics of influenza, or direct injury.

Symptoms.—*Onset* is usually insidious, but may be heralded by distinct chills or rigors, followed by fever; *pain* in præ-cordial region, influenced by respiration, motion, and percussion, shooting to left shoulder; dry cough; dyspnoea; anxiety; excited heart-action; palpitation. Cardiac impulse marked and excited; occasional friction fremitus felt. Auscultation reveals friction-sounds over heart, not influenced by respiration, most distinct at the base.

Second stage, or stage of effusion, begins at the end of the first day. Increased dyspnoea and oppression; nausea and vomiting; pulse weak and irregular; hiccup; dysphagia; syncope; delirium; high fever; and nervous symptoms. Impulse feeble and wavy; præcordial dullness increased, as a

triangle with the base downward, below the line of the sixth rib; feeble heart-sounds at apex; friction-sounds at base.

Third stage, or stage of absorption. Symptoms all lessen; dullness gradually disappears; friction-sounds return; fever subsides, but irritability of heart persists for a long time. *Convalescence is slow.*

Chronic Pericarditis.—When the effusion of acute pericarditis is not absorbed the disease becomes chronic. Præcordial region bulges; triangular dullness; weak heart-sounds, with friction-sounds at base; pain; feeble heart-action; dyspnœa; and disturbed circulation. Adhesions between the heart and pericardial membrane cause depression or dimpling of an intercostal space, usually at apex-beat, during systole.

Pathology.—Pericardial, serous membrane is dull in color, red with the hyperæmia, and covered with an exudation of plastic lymph, fibrinogen, and leucocytes, arranged in layers, during first stage. Serum soon exudes, in varying amounts; distends pericardial sac; causes dyspnœa; interferes mechanically with heart's action, and is sometimes mixed with blood. When fluid is absorbed the pericardial walls come in contact and cause fibrous adhesions between the visceral and parietal layers. Rarely does the pericardial effusion become purulent. Membrane may be studded with miliary tubercles. When no perceptible serous effusion is present the case is termed *dry pericarditis*. Myocarditis frequently complicates.

Diagnosis.—See *Endocarditis*, page 129.

Prognosis.—*Simple pericarditis* is rarely fatal. *Complicating Bright's disease, tuberculosis, or septic fevers*, it usually terminates fatally. *Sequela* are adhesions between pericardium and heart; cardiac hypertrophy and dilatation.

Treatment.—Absolute rest in bed; most nutritious, dry diet; and avoidance of every source of excitement, emotion, or worry. Applications of sinapisms, leeches, cups, or ice over

præcordial region. Medicinal treatment resolves itself into treatment of cause. Veratrum or aconite when heart is turbulent. Digitalis, strychnine, or belladonna as cardiac stimulants. Tonic doses of quinine and iron. Control fever with pill acetanilide comp. (form, p. 27). Marked dyspnœa calls for *paracentesis*. Great relief often follows the use of diuretics, diaphoretics, and cathartics, but they must be used with utmost caution. *Morphina must be given only as a last resort to relieve pain.*

Chronic cases, with adhesions, call for local counter-irritation; potassii iodidum; stimulants of iron, quinine, and strychnine; best nutritious diet; and rest. Paracentesis may be indicated.

HYDROPERICARDIUM.

Description.—Pericardial dropsy is a passive or non-inflammatory accumulation of serum in the pericardial sac, due to Bright's disease, valvular heart-diseases, or any obstruction to the pericardial venous circulation. The fluid is pale yellow; contains a small amount of albumin, fibrin, and blood. Symptoms are dyspnœa, especially when lying down; bulging of præcordial region; increased dullness, triangular, with base down; indistinct heart-sounds; no friction-sounds; dry cough; weak circulation; accompanies other forms of dropsy. Symptoms of cause.

Treatment.—Entirely dependent upon cause, and must be treated as such. Great dyspnœa may be relieved temporarily by paracentesis, but the fluid soon returns. Best dietary and hygienic measures.

DISEASES OF THE BLOOD-VESSELS.

ANEURYSM.

Definition.—An abnormal dilatation of the walls of an artery, classified as sacculated, fusiform, and dissecting.

A *sacculated aneurysm* is one in which the enlarged sac communicates by a small opening in one side of an artery and forms a distinct tumor.

A *fusiform or spindle-shaped aneurysm* is one in which the whole circumference of the artery is enlarged for a limited area, and not sacculated.

A *dissecting aneurysm* is one in which the blood dissects its course between the inner, middle, or outer coats of the artery for some distance and then reënters it again.

Etiology.—Atheroma; arteritis; *sudden straining efforts*; a result of syphilis, traumatism, and atrophy. Most common in old men from forty to fifty years.

Symptoms.—*General.*—*Tumor* in the superficial areas of the body is the first point that attracts attention. It always accompanies aneurysms, and varies in size according to its duration and the part affected. It may be hard, soft, or compressible. Always located over the course of an artery. *Pain* of a sharp, shooting, or dull character is almost always present and is increased at times by pressure; most severe over the tumor, and radiates from this point along the course of the nerves involved by its pressure. *Thrill* or pulsation is synchronous with the heart's beat, and causes a gentle, rising

and falling (expanding and contracting) sensation to the hand, often seen by the eye. In addition to this a thrill is often imparted to the hand. Recent aneurysms impart a greater thrill than those of long standing.

Bruit, a constant symptom, is best heard over the seat of tumor, and varies from a soft systolic or diastolic gurgle to a harsh, rushing or thrilling sound. Most prominent in sacculated aneurysms, and produced by the blood circulating through the narrow opening into a large sac.

Pressure Symptoms.—*Thoracic Aneurysm.*—The tumor, as it enlarges, presses against the œsophagus and causes difficult deglutition; impinges on the trachea, giving rise to constant cough and dyspnea; compresses areas of lung-tissue, with consequent atelectasis; interferes with normal heart's action; presses on the pneumogastric, phrenic, sympathetic, and other nerves, with concomitant symptoms. *Pupils often unequal* from pressure on the sympathetic; voice changes or is often lost. Bulging of sternum or whole thoracic wall in advanced cases. Occasional attacks of angina pectoris. *Inequality of right and left radial pulse.* Loss of flesh; anemia; embolism; and, commonly, death from exhaustion, pain, or rupture of the sac.

Pathology.—An aneurysm usually develops in an artery at the point where the greatest pressure is brought to bear, either from the heart's action or mechanical injury. The arterial wall is weak, degenerated, and, by the blood-pressure, dilated. The tunica intima soon ruptures, as a general rule, leaving the tunica media and adventitia. Blood circulates through the dilatation or sac somewhat sluggishly, with a vortex motion. This allows a deposit of fibrin on the inner wall of the sac, and, if it continues, ultimately fills it, and is nature's cure. Other cases continue to enlarge; cause erosion or absorption of bones; press upon surrounding organs; and

ultimately cause death. Coagula formed in the aneurysmal sac are liable to be carried into the general circulation and cause embolism.

Prognosis.—A large proportion of cases terminate fatally if left alone. Aneurysms of the aorta are almost certainly fatal. The great danger lies in rupture; pressure on surrounding viscera; inflammation; and gangrene.

Treatment.—*Constitutional.*—In those cases where surgical interference is contraindicated the patient must pass most of his time in a recumbent position; avoid all excitement, exercise, or anything that would increase arterial tension. Give a minimum of liquids, and enforce a dry diet to reduce the quantity of blood and increase its richness. Over-activity of the circulation must be reduced by aconite or veratrum. Relieve pain by bromides, chloral, paraldehyde, or, as a last resort, opium. Constant administration of potassii iodidum in large doses (gr. xl-c, daily) favors formation of coagula. Ice or counter-irritation may relieve pain. Ergot is of doubtful utility. Tonic treatment if indicated.

Local Treatment.—This includes all surgical means, such as ligation; section of the sac; introduction of foreign bodies; electrolysis; and such measures as come under the domain of surgical works.

PHLEBITIS.

Description.—Inflammation of the walls of a vein is caused by mechanical injury—compression, puncture, incision, or bruising. Due to syphilis; gout; extension from other parts; high fevers; varicosities; cold. May be idiopathic. Phlebitis extends from its point of origin toward the heart. The superficial veins, when affected, stand out as hard cords; are very tender to pressure; outlined by a red line over their course.

Surrounding tissues swollen. *Constitutional symptoms* are those of a septic fever: chills and rigors; great anxiety; hectic flush; depressing sweats; high temperature and increased pulse-rate. Thrombi form in the vein, are often carried into the general circulation, and cause septic thrombosis or embolism. Abscesses may form in the course of the vein.

Treatment.—*Absolute rest in bed and avoidance of rubbing or friction* to prevent septic thrombosis or embolism. When the parts are swollen greatly, incise freely along the long axis of the vein. Hot applications often greatly relieve. Quinine should be administered in doses of gr. iij–xv, as indicated. Best nutritious diet and iron tonics. Abscesses must be promptly evacuated.

DISEASES OF THE BLOOD.

INTRODUCTION.

The blood is an organized, vitalized tissue by which nutrition is supplied to every living cell of the body, and is kept in circulation through the arteries, arterioles, capillaries, venules, and veins, by the pump-like action of the heart and the resiliency of the vessel-walls. Healthy blood consists of a colorless plasma in which the corpuscles are suspended, and is composed of twenty-one percent. of solid matter and seventy-nine percent. of water. The amount of blood in a healthy person is estimated at seven and seven-tenths percent. of the body-weight. The colorless plasma contains fibrinogen, albumin, salts, and water. There are two kinds of blood-corpuscles, the white and the red. The *red corpuscles* are round, biconcave disks, $\frac{1}{2500}$ inch in diameter, and number about five million to the cubic millimeter of blood. They convey oxygen from the lungs to the tissues, and carbon dioxide from

the tissues to the lungs, where it is eliminated. The red cells are rich in hæmoglobin, which seems to be the element in their structure that conveys the oxygen. The *white corpuscles* are irregular in structure and have an amœboid movement. Their proportion to the red varies according to the diet, time of day, and general nervous condition. There is about one white corpuscle to one hundred red. Authorities differ in regard to the proportion and state it to be one white to fifty or three hundred red. The white cells act as scavengers and enter into every process of repair.

ANÆMIA.

Definition.—Anæmia is a general term used to designate a deficiency of the normal physiological elements of the blood, whether of mild or malignant type, and is always secondary to some pathological or mechanical disturbance. It is classified as (1) symptomatic or (2) essential.

(1) SYMPTOMATIC ANÆMIA.

Definition.—Symptomatic or secondary anæmia is that form in which the normal physiological constituents of the blood are diminished by mechanical causes or demonstrable pathological lesions.

Etiology.—Most common in young girls and those of sedentary habits. Every form of hemorrhage, primary or secondary, independent of causation. Improper diet. Mal-assimilation of food due to impaired digestion and bolting of food without proper ensalivation: gastritis; and structural lesions of the œsophagus, stomach, intestines, or liver. All chronic and acute diseases are attended by a certain amount of anæmia. Chronic discharges from abscesses, and sinuses, uterine disease, and

allied troubles always diminish the nutritive power of the blood. Cancer, malaria, syphilis, tuberculosis, mineral and vegetable poisons, diseases of the lymphatic glands and the blood-making organs. Confinement in close rooms; lack of exercise and pure, fresh air; mental and physical over-work. Appears to be hereditary in some families.

Symptoms.—Among the earliest symptoms of this condition is *pallor*. The skin gradually loses its normal red or pink-tinged color and becomes pale and white. The mucous membranes assume an ashy-white or dull-white appearance. The conjunctivæ look pearly-white. In fact the patient assumes a very “delicate” appearance. Slight exercise or exertion causes shortness of breath, marked fatigue, palpitation of the heart, or exhaustion. Dizziness or syncope is produced by suddenly rising from a sitting or stooping posture to the erect. Tinnitus aurium; pulse is weak and slightly increased; constipation; appetite is capricious and poor. These patients usually dislike fats, meats, and albuminoid foods, and prefer the improper diet of starches, “tea and toast,” and coffee. Headache, vomiting, gastritis, loss of weight, and, late, dropsy. In profound anæmia functional murmurs are heard during systole at one or more valves of the heart, of a soft, blowing character. A *bruit de diable* or venous hum is heard over the lower portion of the jugular vein. Among the ultimate sequelæ are gastritis, gastric ulcer, fatty degeneration of the heart and liver, chronic dropsy, and cerebral disorders.

Pathology.—Whether dependent upon the rapid loss of blood from profuse hemorrhage or upon the slow drain of chronic disorders, the principle involved in secondary anæmia is always the same—the withdrawal of the albuminoid constituents and the red cells in large or small amounts. The constant drain on the blood cannot be met by the process of absorption, assimilation, and conversion of food into nutri-

ment; hence a depravity of this tissue. The circulation of poisonous elements in the blood prevents the normal metabolic changes and impairs the process of absorption and assimilation. Impoverished blood means a change of a destructive nature in the metabolic process (*catabolism*). Examination of the blood with the microscope shows it to be thin; a marked absence of the normal rouleaux; marked diminution in the number of red corpuscles. The white corpuscles are unchanged. Hamoglobin is diminished in quantity. The tissues of the body show a lack of blood. The clots formed are not firm.

Diagnosis.—Made from the general symptoms, microscopical examination of the blood, and clinical history.

Prognosis.—Depends upon the cause. Most cases are remediable if not permitted to run until marked complications exist.

Treatment.—*Causal.*—Seek for the cause and use means toward its removal, for if allowed to remain your results will only be palliative or nil.

Hygienic.—Insist upon daily exercise in the pure, fresh air of the country, mountains, or sea-shore. Live out-doors as much as possible. Avoid close, stuffy rooms, close confinement, violent exercise, and excitement. Change occupation if necessary. Wear soft, light, medium-weight woolen under-clothing (always use pure-white woolen goods) during the whole year, and change outer garments according to temperature. This method of clothing one's self prevents sudden changes of bodily temperature and liability to take cold. Sleep in a cold room, with sufficient clothing to keep warm. Heated, unventilated, closed rooms are an abomination, and only add to the diseased condition. A daily, tepid, salt-water bath, followed by a brisk rub with a coarse towel, and rest for an hour or two afterward. Long hours of sleep at night.

Dietetic.—Avoid coffee, tea, toast, large amounts of starchy foods, heavier vegetables, and those things that cause oppression and indigestion. Encourage the use of hot, rich milk; soft-boiled eggs; scraped beef, broiled over the coals and seasoned to taste; rich broths and soups; pig's-feet jelly; fish, occasionally; game of any kind; sweetbreads; light custards and puddings; baked potatoes. Insist on thorough mastication and full time for each meal, with the avoidance of liquids to moisten and wash down the food. Take everything in moderation, as over-eating is productive of harm. Rest in the reclining position for an hour or longer after each meal.

Medicinal.—Do not fall into the error that "anæmia always indicates the administration of iron and arsenic." Symptomatic anæmia *per se* requires very little medicine, but marked attention to the cause, diet, and hygiene. Meet every indication with appropriate remedies. Stimulate the emunctories. Cod-liver oil may be administered to advantage in some cases, if the digestion is not impaired by it. Iron is best given as an albuminate, and the following is a favorite combination of the author:

R

Pulv. ferri albuminatis gr. ij.

Strychninæ sulphatis.

Acidi arseniosi aa. gr. 1/60.

Misce. Fiat in tablet (triturate). No. 1. Signa. One after meals and at bedtime.

The elixir of the four chlorides is frequently administered with the best results, and consists of hydrargyri bichloridum, liq. arsenici chloridi, tr. ferri chloridi, and acidum hydrochloricum. Many other combinations of iron are recommended, but with these two every indication can be met. Glycerole phosphates comp., f ℥ j, after meals, is very efficient in many cases.

(2) ESSENTIAL ANÆMIA.

Essential or primary anæmia embraces those cases of profound anæmia whose pathology is not definitely known, and manifests itself in two principal forms, viz. : (a) chlorosis and (b) progressive, pernicious anæmia.

(a) *Chlorosis.*

Description.—A profound variety of anæmia existing in females about the age of puberty. All the symptoms of secondary anæmia are present, with the addition of a marked decrease or absence of the menstrual flow, and hysterical manifestations. The skin is changed to a white, waxy-like appearance in light-colored complexions, and ashy-white in dark-colored persons. Sometimes the skin presents a light tinge of green; hence the name *green-sickness*. The red blood-corpuscles are diminished about fifty percent., and the hæmoglobin is about twenty-five percent. of the normal. The red cells are more or less deformed. The pathology of this affection is not definitely known, but the prominent theory appears to make it depend upon the non-elimination of poisonous matters from the blood, and the presence in the circulation of ptomaines and leucomaines. This is possible, but rather improbable.

Diagnosis.—In the negro race: young negro females: eyes pearly-white; dark areola below the eyes; a peculiar ashy appearance of the skin, with a lack of the normal luster; extreme pallor of all the mucous membranes; and microscopical blood-changes, together with general symptoms already enumerated.

Prognosis.—Rarely fatal if treated early. It tends to recur after recovery. May last from a few months to many years. Complications are usually bad.

Treatment.—Follow the same line of treatment indicated for symptomatic anæmia.

(b) *Progressive, Pernicious Anæmia.*

Synonyms.—Idiopathic anæmia; malignant anæmia.

Description.—A progressive, obstinate anæmia, common to both sexes between the twentieth and fortieth years, that ultimately tends to terminate fatally. Its causation is still obscure. Many theories have been advanced, but it is a question whether lesions of the stomach, bones, marrow, and spleen are not results rather than causes of the trouble. There are present all the symptoms of simple anæmia, greatly aggravated. Fever, varying from 100° to 103° F., is present at irregular intervals. Skin is pale and waxy-looking, with here and there large and small petechial spots. Diarrhœa is frequently obstinate. Retinal hemorrhages; epistaxis; and œdema of the ankles. Blood, examined microscopically, shows a great diminution of red cells. White cells normal. Red cells are pale, owing to a loss of hæmoglobin, and distorted in appearance. Fatty degeneration of the heart, liver, and kidneys complicates. The bone-marrow is reddened and contains nucleated red blood-cells. Iron pigment is deposited in the spleen, liver, and skin. Death at the end of one year is the usual termination. Recovery is rare.

Treatment.—Treat as indicated in secondary anæmia. Meet symptoms and complications as indicated in each case.

LEUCÆMIA.

Description.—Leucæmia (leucocythæmia) is a pathological state of the blood in which there is a great increase in the number of white corpuseles, and accompanied by changes in

the spleen (*leucamia splenica*), marrow of the bones (*leucamia myelogenica*), and lymphatic glands (*leucamia lymphatica*). This disease occurs most frequently in men about the fortieth year. Gradual enlargement of the spleen until dullness occupies the whole left side of the abdomen. Spleen is hard on palpation, with a sharp anterior border. Lymphatic glands of the neck, axilla, and groin are frequently enlarged. Liver may be increased in size. Soreness or tenderness on percussion often manifests itself in the long bones. Patient soon becomes anæmic in appearance. Dyspnœa; spontaneous hemorrhage from the mucous membranes; retinal hemorrhages. Temperature is slightly elevated, with occasional high fever or remissions. Ascites, obstinate diarrhœa, pleurisy, pneumonia, and cerebral apoplexy complicate during the later stages.

The blood is thin and pale; forms large, pale, soft, imperfect clots. Hæmoglobin and red cells are diminished in number. White corpuscles are increased in number (one to six or even one to three), vary in size, and often multinucleated. The pathology of this disease is unknown. Prognosis is always bad. With few exceptions, death ensues within three years.

Diagnosis.—*Leucocytosis* is a transient, temporary increase of the white corpuscles, without structural changes in the spleen, glands, or marrow of the bones, and never fatal.

Treatment.—*Symptomatic.*—Treat as indicated in simple anæmia. Arsenic, iron, mercury, and gold seem to be the most efficient palliative remedies. Endeavor to reduce the enlarged spleen by cold douches and inunctions of ung. hydrargyri rubri (U. S. P.).

PSEUDO-LEUCÆMIA.

Synonyms.—Lympho-sarcoma: Hodgkin's disease.

Description.—A general enlargement of the lymphatic

glands, accompanied by marked anæmia, cachexia, weakness, palpitation of the heart, dyspnœa, hemorrhages from the mucous membranes, dropsy, and, ultimately, death. *Lymphoid growths* appear in different parts of the body. Temperature is always high in the evening. Spleen and liver are enlarged, tender, and contain the lymphoid growths. The red blood-cells are diminished in number, but the white are unchanged, except an occasional increase in the later stages.

Diagnosis.—At first it is uncertain, but the appearance of lymphoid growths makes it certain when taken with other symptoms.

Prognosis.—Most cases terminate fatally. Some may be arrested temporarily.

Treatment.—Best hygiene and diet, as in anæmia. Iron, cod-liver oil, syrup of hydriodic acid, and arsenic in the early stages. Later, use mercury, the iodides, and chloride of gold. Treat symptomatically.

SAPRÆMIA.

Definition.—Sapræmia (σαπρός, putrid; αἷμα, blood) is a febrile reaction dependent upon the absorption and circulation of ptomaines (a product developed by germs) in the blood.

Etiology.—Ptomaines are absorbed and carried into the circulation from putrefying or improperly cleansed wounds, sores, or sinuses; the development of germs in the intestinal canal in typhoid and typhus fevers; obstinate constipation; and cancers. In fact, ptomaines are developed in some portion of the body in every disease, are absorbed, and cause varying degrees of sapræmia.

Symptoms.—Frequently begins with a chill, followed by fever. Other cases begin with slight headache; tendency to vertigo; general malaise; occasional nausea or vomiting; in-

creased pulse-rate; gentle or profuse perspiration. Temperature gradually rises to 101° or 103° F. If the cause is not removed delirium sets in, and the trouble soon passes from a state of sapremia to one of septicæmia or pyæmia.

Pathology.—The condition is dependent entirely upon the absorption of ptomaines, not germs. Every germ, by its growth and development, excretes a product recognized by us as a ptomaine. This ptomaine acts as an irritant, when coming from certain germs, and when taken into the circulation is brought in contact with the various nerve-centers, over-stimulates them, and causes the symptoms mentioned. The severity of the affection varies with the amount and character of the ptomaine absorbed.

Prognosis.—Usually very good, provided the seat of trouble can be reached with appropriate remedies. The greatest dangers lie in the production of profound anæmia in prolonged cases, exhaustion, heart-weakness, septicæmia, and pyæmia.

Treatment.—Remove the cause. Thoroughly cleanse cuts, burns, sinuses, abscesses, and all surgical wounds with antiseptic solutions, and the trouble will remedy itself. When dependent upon deleterious products in the intestinal canal, administer purgatives and intestinal antiseptics. If the ptomaines can be neutralized by antiseptics the symptoms subside at once. No known drug will render the blood antiseptic. Sustain strength with stimulants, quinine, and iron. Treat causative trouble.

SEPTICÆMIA.

Definition.—Septicæmia (σητω, to putrefy; *aima*, blood), "blood-poisoning," is an acute, infectious disease caused by the presence of disease germs and their ptomaines in the circulation, and is never complicated by multiple abscesses.

Etiology.—Disease germs enter the blood from surgical wounds; bites of animals, reptiles, and insects; dissecting wounds; post-partum troubles; breathing septic gases; acute infectious and contagious diseases; and the absorption of septic matter.

Symptoms.—Frequent rigors, followed by fever, 101° to 105° F.; exhausting sweats; delirium or coma; rapid pulse; enlarged and tender spleen; headache; nausea and vomiting; hemorrhages from the internal organs; petechial spots on the skin; loss of function of one or more parts of the body. Blood is impoverished and contains an increased number of white blood-corpuscles and a diminished number of red. Germs are also found in the blood. Secondary abscesses never form in simple septicæmia. Convalescence is slow. The disease assumes a typhoid state. Embolism, endocarditis, and pyæmia often complicate.

Prognosis.—Depends upon the cause. Embolism and pyæmia, as complications, are bad signs.

Treatment.—All surgical and medical causes should be dealt with from the antiseptic standpoint and operative procedure. Quininae bisulphas, gr. ij, every two hours, with tr. ferri chloridi, gtt. v. Salicylate of soda or ammonia will relieve fever, and is antiseptic. Sulphocarbolate of zinc, gr. ij–v, or salol, gr. v, every two or four hours, exerts an antiseptic influence, especially when the trouble has its origin in the intestinal canal.

Sustain strength by stimulants and most nutritious diet at frequent intervals. “Administer alcoholic liquors freely,” says one physician, “until you obtain their physiological effects, for these cannot be obtained until the disease is checked.” Stimulate the emunctories. Stimulate during the whole period of convalescence. Treat all complications and sequelæ.

PYÆMIA.

Definition.—Pyæmia is septicæmia accompanied by secondary, metastatic abscesses.

Etiology.—The exciting cause is the presence of pyogenic germs, which enter the circulation through some abrasion. Surgical and dissecting wounds, ulcers, abscesses, sinuses, gonorrhœa, Bright's disease, phlebitis, acute fevers, malignant endocarditis, and uterine diseases all predispose to this condition. Some cases appear to be idiopathic.

Symptoms.—Begins suddenly with a chill, followed by high fever, profuse sweating, and marked prostration. Chills and rigors occur at intervals of several hours or days. Fever intermits and remits. Flushed face; great thirst; coated, dry tongue; increased respiration; rapid emaciation; anemia; jaundice, occasionally; nausea, vomiting, and diarrhœa.

Secondary or metastatic abscesses soon form in different organs and parts of the body. The lungs seem to be the most frequent seat of abscesses. Septic, ulcerative endo- or pericarditis; peritonitis; abscesses of the liver and spleen. In chronic cases the joints and subcellular tissue of the skin are most commonly affected. When abscesses form, the disease assumes a typhoid condition and usually terminates fatally. Cerebral symptoms are prominent, and mask other signs in many cases.

Pathology.—The disease is undoubtedly caused by the entrance of a variety of the pyogenic germ (*streptococcus pyogenes albus*; *s. p. aureus*; *s. p. citreus*), together with its ptomaïnes. Ptomaïnes cause the acute symptoms by their action upon the nerve-centers.

1. The pyogenic germ enters the circulation direct; finds lodgment in some of the tissues of the body; develops at the

expense of those tissues; causes inflammation, with breaking down of cell-structure and suppuration. Thrombi form, break up, and throw septic emboli into the general circulation. These find lodgment in the lungs, liver, spleen, or other organs, and produce new foci of suppuration.

2. Small particles of septic matter, bearing the pyogenic germ, enter the circulation as septic emboli directly from abscesses, surgical wounds, or post-partum uterine troubles, and cause the disease.

3. Some cases appear to arise idiopathically. In these cases the germ enters from some unknown source.

Prognosis.—Recovery, although possible, is rather uncertain. Grave complications and sequelæ always accompany and follow the disease.

Treatment.—*Preventive.*—Never neglect surgical wounds, abscesses, ulcers, and post-partum affections, but treat them radically with the latest antiseptic precautions—always looking to free drainage. Keep the emunctories active, and the best physiological condition possible. Avoid the use of unclean surgical instruments. Look to personal cleanliness. Destroy all septic products from the patient.

Active Treatment.—Sodii salicylas, gr. v–x, every three hours, or sulphocarbolate of zinc, gr. j–v, every three hours, with a view to antiseptis. Accompany these remedies with quiniæ bisulphas, gr. ij–v, at intervals of two or four hours. Stimulate freely with alcoholics, and most nutritious, concentrated, liquid diet. Promptly evacuate and treat every abscess as soon as discovered, provided it can be reached. If necessary, reduce temperature by cold sponge-bath rather than resort to aconite, acetanilide, and other heart-depressants. Extreme caution must be exercised to prevent inoculation of the disease, as it is infectious and will reproduce itself in others. During convalescence administer best diet and

tonics of iron, arsenic, strychnine, and quinine. Free exercise in open air.

PURPURA.

Description.—Purpura consists of hemorrhage into the upper layers of the skin, from disease or traumatism. Simple traumatic purpura is caused by bruises, and manifests itself as ecchymoses. Medically it is a condition manifesting itself as purpura simplex; purpura hæmorrhagica; purpura rheumatica; purpura urticans.

Purpura simplex manifests itself by the appearance of spots varying in color from a pale red to a blue or purple. These spots are from the size of a pin's head to one-half inch in diameter, not elevated, and not influenced by pressure. They appear on any portion of the body. In a few days the color gradually changes to a blue, brown, or yellow tint, and finally the spots disappear. No constitutional symptoms, aside from slight anæmia, very mild fever, and loss of appetite. Simple cases recover in ten days or two weeks, but are liable to recur.

Purpura hæmorrhagica ("land-scurvy") is an aggravated form of the simple trouble, accompanied by profuse hemorrhage from the mucous membrane of the nose, mouth, bronchial tubes, stomach, intestines, kidneys, or from the serous membranes. Mucous membrane is not swollen or spongy. Anæmia, with all its symptoms, complicates.

Purpura rheumatica is an acute rheumatism in which blood is extravasated into the layers of the skin.

Purpura urticans is a simple purpura complicated by urticaria or simple hives.

Pathology.—No definite pathological factor has been found to satisfactorily explain the affection. Among theories ad-

vanced are: (1) localized lack of vaso-motor tone; (2) disease of the capillary blood-vessels of the skin; (3) a change in the character of the blood.

Treatment.—Simple purpura is relieved by rest in bed. Severe cases require tonics of iron, arsenic, and strychnine. Turpentine, ergot, tannic and gallic acids, in hemorrhages from the mucous membranes. Treat symptomatically and according to complications present.

SCORBUTUS.

Synonyms.—Scurvy; sea-scurvy.

Definition.—A form of purpura occurring among those who have been living on an innutritious diet, with a lack of vegetables and vegetable acids.

Etiology.—Most common among sailors, soldiers, and convicts, who cannot procure a diet of fresh vegetables and acids. A diet of salt pork is a common cause. Uncleanliness, exposure, intemperance, and other diseases predispose to an attack of scurvy where a proper diet is lacking. Northrup and Crandall describe *infantile scurvy*, which is often present where prepared foods and condensed milk are used exclusively.

Symptoms.—*Onset* is slow. Patient becomes pale, weak, indifferent to duty, drowsy, stupid, and has shooting pains in the back and legs. An eruption of purpura appears first on the legs, then on other parts of the body. The gums are swollen, spongy-like, separated from the teeth, covered with a white, offensive coating, bleed freely when touched, and often ulcerate. Teeth loosen and fall out. Tongue is coated, large, and flabby. Hemorrhages from all the mucous membranes, with slight elevation of temperature in the later stages. Edema of the lower extremities and enlargement of the spleen. Severe cases have ulcers of the skin, gangrene, pulmonic

troubles, pleurisy, and obstinate dysentery. Healed ulcers, cuts, and fractures often break their line of union in the later stages. Death is caused by syncope, exhaustion, hemorrhage, or one of the complications.

Pathology.—The disease is undoubtedly due to a lack of vegetable diet and the vegetable acids, and is neither infectious nor contagious. Why an absence of vegetables should produce a pathological condition of this kind is not known. It has been ascribed to a lack of the salts of potash, but these salts will not cure if given alone. There is a lack of vasomotor tone. The blood is diminished in bulk, impoverished, and watery in consistence. Many of the tissues of the body are atrophied. Spleen is enlarged.

Prognosis.—Very favorable, if not complicated.

Treatment.—*Preventive.*—Scrupulous cleanliness of the body and of the apartments used. A liberal diet of fresh or dried vegetables and fruit, fresh milk, and beef-juice. Sailors, soldiers, and convicts, who cannot obtain fresh vegetables, should take not less than one ounce of lime or lemon juice daily. Stimulants used in moderation if necessary.

Active Treatment.—Rest in bed. Medicinal treatment is of secondary importance in uncomplicated cases, as a change of diet to lime or lemon juice, tart fruits, vegetables, milk, and fresh beef will meet every indication. Washes of alum, chlorate of potash, capsicum, carbolic acid, and other astringents and antiseptics, for the condition of the gums. Treat all complications and sequelæ as indicated in other parts of this work. Tonic treatment.

HÆMOPHILIA.

Description.—Hæmophilia, hemorrhagic diathesis, bleeders' disease, is a tendency to obstinate hemorrhage, resulting from

the slightest abrasion or occurring spontaneously. It is a congenital disease *transmitted from mother to son*, and rarely found in women. It may skip one generation and manifest itself among the male members of the next. Etiology is unknown. The disease usually manifests itself in the first few years of life by an obstinate, spontaneous hemorrhage from one of the mucous membranes, or an unusually large and obstinate hemorrhage from a slight surgical wound, which is so severe that it frequently cannot be controlled until the patient is almost exsanguine. These patients are in good health during the intervals, but are anæmic from the loss of blood. Blood often escapes into the joints or under the skin, forming large blood-tumors. Death during the early years of life is the common sequel, but some live to pass middle life.

Treatment.—Best results can be accomplished by prophylaxis. No operation, unless absolutely necessary, should be done upon one who is a hæmophilic. Keep the emunctories active. Avoid too rich diet and over-exertion. A sedentary life is best. Hemorrhage must be controlled by surgical and medical means. Always be prepared to meet secondary hemorrhage. These classes of patients should never marry—this being the only manner of eradicating the disease.

DISEASES OF THE SUPRARENAL CAPSULE.

ADDISON'S DISEASE.

Definition.—A disease, brought to the attention of the profession by Thomas Addison in 1855, in which there is debility, feeble circulation, vomiting, pigmentation of the skin, and degeneration of the suprarenal capsule. Sometimes termed *mal-asma suprarenale*.

Etiology.—Most common in males from eighteen to forty years of age. Tuberculosis, debility, and poverty appear to predispose. No definite or distinct cause can be mentioned yet.

Symptoms.—*Onset* is gradual, with a constant feeling of languor, depression, and anæmia. Occasional pains in the back. Tendency to syncope. Heart's action is weak, and the pulse is compressible and small. Nausea and vomiting appear later, and often prove obstinate. The face and body assume a *bronzed appearance* in irregular patches, which eventually coalesce and cause a uniform dark color over the whole or a part of the body. Anæmia becomes profound. Dropsy is a late symptom. The disease may remit for a time, but soon returns.

Pathology.—No positive origin can be given. Some claim it to be due to a tuberculous process involving the suprarenal capsule and surrounding glandular structure. If the suprarenal capsules are blood-making organs, degeneration and impairment of their function may account in part for the

anæmia. That there is an impairment of the vaso-motor supply of the skin is shown by the deposit of black coloring matter in the rete malpighii. The suprarenal capsules are enlarged, irregular, and vary in color from a gray to a green or yellow. Sometimes they are cheesy. Degeneration is either tuberculous or calcareous. Surrounding connective tissue is thickened, and the cicatricial tissue may press upon branches of the pneumogastric and solar plexus. Tuberculosis is frequently found in other organs.

Prognosis.—Death terminates the disease within one year and a half. Rarely, it may intermit and last several years.

Treatment.—Nothing can be done to cure. Symptomatic treatment. Best diet, stimulants, tonics, and alteratives.

DISEASES OF THE MOUTH.

STOMATITIS.

Synonyms.—Catarrh of the mouth ; simple or erythematous stomatitis ; inflammation of the mouth.

Definition.—Stomatitis is an inflammation of the mucous membrane of the mouth, recognized by redness, heat, pain, exudation, and impaired function.

Etiology.—Alcohol, hot liquids, tobacco ; sharp points and tartar on the teeth ; teething, improper food, mechanical or chemical injury, uncleanness, exposure to cold, and extension from other parts, as from erysipelas. It is *secondary* to measles, scarlet fever, variola, and disordered digestion.

Symptoms.—Mucous membrane of the mouth is dry, hot, red, and swollen. There is a profuse flow of mucus. A burning sensation, and tenderness on pressure. Breath is bad, and there is a bitter, clammy taste in the mouth every morning. Sense of taste is blunted ; salivation not infrequent. Great thirst ; fever absent or very slight ; not usually accompanied by indigestion. Infants cry, are restless, cannot properly grasp the nipple, and often refuse it entirely. Tongue is swollen, covered with a yellowish-white coating, and indented by the teeth. Acute stomatitis is most common in children.

Chronic stomatitis is most common in adults. Tongue is coated and flabby ; bitter taste in the mouth, and a desire for highly seasoned food ; marked depression of spirits ; and sub-acute or chronic symptoms similar to the acute.

Pathology.—*Acute stomatitis* is confined to the mucous and submucous tissues of the mouth and tongue. Secretion is at first lessened, then increased, and acid in reaction. Pathology is that of a simple inflammation. In the *chronic* form, the papillæ are more prominent; inflammatory tissue is formed; infiltration follows; and the functions of the tongue and salivary glands are permanently impaired or lost.

Diagnosis.—Direct examination and history suffice.

Prognosis.—Good in acute cases. Short in duration. Chronic stomatitis depends upon the removal of the cause.

Treatment.—Remove cause. Have sharp points and tartar on the teeth removed. Avoid all irritants such as condiments, spices, and tobacco. Cleanse the mouth frequently, especially after eating, with borax-water, lime-water, or solution of carbonate of soda. Bichloride of mercury, gr. j-f $\frac{3}{4}$ viij, locally.

R

Acidi borici 3iss.

Glycerini f $\frac{3}{4}$ ss.

Aquæ q. s. ad. f $\frac{3}{4}$ ij.

M. Signa. Use freely as an application to the affected parts.

Weak salt water; a mixture of carbolic acid, glycerin, and tr. iodini comp.; tr. myrrhæ et capsici co., gtt. xv to a tumbler of water, make good mouth-washes. General stimulants if necessary. Stimulate the emunctories. Listerine, or ext. pinus Canadensis fluid., and chlorate of potash are used as bases for mouth-washes. Salicylic acid, gr. j-f $\frac{3}{4}$ j, applied locally, will relieve the burning pain. If the inflammation is severe in teething children, it is well to lance the gums. Chewing a piece of rhubarb-root before retiring is an old but effective remedy. Solutions of sulphate of copper and zinc, in varying strengths, are used.

APHTHÆ.

Synonyms.—Aphthous, follicular, vesicular, or croupous stomatitis.

Definition.—A circumscribed, croupous stomatitis, recognized by small, isolated, round, white vesicles which coalesce and develop upon or under the epithelial layer of the mucous membrane, break, and leave an open ulcer which is very slow to heal.

Etiology.—Teething and bad hygiene are the most prolific causes. Common among the poor and those reduced by disease. Epidemic and probably contagious. Complicates measles, diphtheria, and other diseases of the mouth.

Symptoms.—Rise of temperature; tongue is sore, and the child nurses with difficulty; vomiting and great thirst; breath smells sour; diarrhœa. The mucous membrane of the mouth is covered in places with a number of aphthæ, or small, pearly vesicles as large as a millet-seed, either isolated (discrete) or running together (confluent). These aphthæ break, and leave an ulcer which has a frosty appearance and hard, thickened edges. It appears first on the lower lip, and spreads. When confluent, symptoms are aggravated and child refuses to nurse. These ulcers heal very slowly.

Diagnosis.—Made from the pearly-white vesicles and frosted ulcer with thickened edges.

Prognosis.—Very good, if taken early.

Treatment.—*Hygienic.*—Fresh air, proper clothing, and cleanliness of body. Regulate diet according to the indications of the case. In young, nursing children, cleanse the mouth with a soft rag and a solution of borax, glycerin, and water after each feeding. Solutions of salt, chlorate of potash, or antiseptics may be used. *Internally*, give a free purge of calo-

mel, or rhubarb and soda, to remove deleterious products in the stomach and intestines, to be followed by five grains of potassii chloras, three times daily. Give tonics if indicated. Touch the ulcers with tr. ferri chloridi, argenti nitras, or the mitigated stick, and apply either aristol, europhen, pyocetanin, iodoform, or bismuth. Ext. hydrastis fluidi, applied locally, is useful.

CANCERUM ORIS.

Synonyms.—Diphtheria of the mouth; ulcerative stomatitis; gingivitis ulcerosa.

Definition.—An acute diphtheritic exudation, limited at first, which spreads, exfoliates, and leaves an angry, ulcerated sore with deep sides, and infiltration of the surrounding tissues.

Etiology.—Occurs in children from five to ten years of age. Bad hygiene and poor diet; debility and weakness from disease; epidemic at times; mercurialism; embolism; contagious.

Symptoms.—Pain, aggravated by mastication; salivation; thick coating on the gums and teeth; caries and necrosis of maxillary bones; breath very offensive; gums red, swollen, and tender. Parotid glands are swollen and painful. Saliva is bloody, digestion disordered, and diarrhœa; fever, restlessness, and insomnia. Submaxillary glands are enlarged and tender. Entero-colitis often complicates.

Pathology.—Gums are congested, swollen, and separated from the teeth. An exudation appears which is thick, white, yellow, gray, or black, and cuts off the blood-supply, causing localized gangrene. Sloughing ensues, and an ulcer results which is irregular, with raised edges, not deep, and covered with a yellow exudation. It extends to the inside of the cheek and tongue, and may cause necrosis of the maxillary bone. Undoubtedly dependent on a germ.

Diagnosis.—*Noma* has an ulcer which is not hard, tense, shiny, or hollowed out; less constitutional disturbance and slower in its course.

Prognosis.—*Good.* Not usually fatal if properly treated. Ulcers heal by cicatrix. Some teeth are invariably lost.

Treatment.—Bear in mind the cause. *Diet* must be most nutritious. Egg-nog, wine, brandy, beef-pulp, beef-extracts, milk, and cream. *Internally*, give potassii chloras, gr. xx per day. An adult may take as much as forty grains of potassii chloras in one day; it appears to exert an action almost specific. Quinine, iron, and stimulants may be used.

Rx

Potassii chloratis..... ʒss.

Syr. ferri, quinae et strychninae phos. fʒv.

Elix. aurantii.....q. s. ad. fʒij.

M. Signa. One teaspoonful every four hours to a child six years old.

Locally, use washes of hydrogen peroxide, borax, or potassii chloras; touch ulcers with silver nitrate or dilute hydrochloric acid. Tanner uses zinc or chlorinated soda, one dram to a cup of water, as a mouth-wash. May apply sulphate of copper, nitric acid, or acid nitrate of mercury. Cover the ulcer with dried alum, bismuth, aristol, eucrophen, or iodoform. *Cleanliness* is the great feature, especially after eating. Underwood uses a decoction of cinchona with dilute sulphuric acid. "No local treatment will succeed if general measures are neglected." (E. Smith.)

ULCERS OF THE MOUTH.

An ulcer is a solution of continuity of the soft parts. There are nine distinct classes of ulcers of the mouth, viz.: (1) a

vesicular sore spot on the tongue; (2) diffuse catarrhal, with much pain and salivation; (3) follicular, due to the occlusion of a gland or vicarious menstruation—sometimes mistaken for chancre; (4) angular, at the angles of the mouth; (5) herpetic, due to herpes; (6) ulcers on the roof of the mouth, due to variola; (7) ulcers of the tongue, caused by sharp teeth; (8) syphilitic; (9) scorbutic.

Diagnosis.—Determined from history of the case.

Prognosis.—Depends entirely upon the class.

Treatment.—*Avoid* hot food, tobacco, and irritants in all cases. *Catarrhal ulcers* should be cleansed with peroxide of hydrogen or bichloride of mercury, gr. ss—Oss. *Follicular ulcers* should be painted with a solution of silver nitrate, and then dusted with aristol, iodoform, or boric acid. In *angular ulcers*, touch with pure acetic acid and apply adhesive straps over the corners of the mouth to prevent irritation and pain in opening it. Borax and glycerin (one to ten); resorcin and glycerin (one to ten). Aristol and euophen make good applications. *Syphilitic ulcers* are derived from kissing, towels, pipes, and cigars which have been used by syphilitic patients, and must be treated specifically with mercury or other alteratives. Other ulcers are treated according to cause.

THRUSH.

Synonyms.—Parasitic stomatitis; “white mouth”; sprew; muguet.

Definition.—Thrush is a parasitic disorder, due to a fungus which attaches itself to the mucous membrane of the mouth or pharynx, and causes stomatitis and gastro-intestinal disorders. Thrush is a *symptom*, and indicates a pathological condition of the system.

Etiology.—Caused by the *oidium albicans*, which is similar

to the *oidium lactis*. Uncleanliness, dryness, and acidity of the buccal secretions favor it. Most common in summer among bottle-fed children. Imperfect ventilation, sanitation, and crowding favor its development. It is rare in nursing children. Not directly contagious; may occur in adults who are debilitated by cancer or tuberculosis.

Symptoms.—Pain, aggravated by nursing or mastication; lips are swollen; saliva increased; breath hot and bad; some fever. Diarrhœa of a sour, green, and irritating character. Gums and mucous membrane are covered with a white, curdy exudation, which, when removed, shows a white, frosty ulcer. Nausea and vomiting.

Pathology.—Microscopical examination of the buccal secretions shows the presence of the *oidium albicans*. The exudation is composed of fat-globules, epithelium, filaments, and spores. Exudation begins at the angles of the mouth and extends posteriorly.

Diagnosis.—*Diphtheria* spreads from below upward; thrush spreads downward and backward. Diphtheritic membrane is adherent. *Aphtha* has a deeper ulcer, is more isolated, and occurs later in life.

Prognosis.—Good, if taken before bowel-complications are pronounced.

Treatment.—Cleanliness of the mouth and body. Nursing-bottles must be thoroughly cleansed, as well as the nipple. Improve hygiene; keep the child in the fresh air, and place a flannel belly-band around its abdomen. Cleanse the mouth with solutions of hydrogen peroxide, borax, glycerin, or lime-water, after feeding. Acidum salicylicum or sodii bromidum (one to eight), locally. Touch superficial ulcers with zinc sulphate, gr. x-f $\frac{3}{4}$ j.

Regulate diet. Sterilize milk and add lime-water to it. Artificial foods may be indicated. For irritable stomach, give

small doses of calomel or bismuth. Treat diarrhœa with syr. rhei aromatici, calomel, salol, or sulphocarbolate of zinc, and lactopepsin.

GLOSSITIS.

Synonyms.—Inflammation of the tongue; psoriasis of the tongue; glossitis desiccans.

Definition.—Glossitis is an inflammation of the parenchymatous structure of the tongue, recognized by swelling, pain, and general inflammatory symptoms.

Etiology.—*Acute glossitis* is due to burns, stings of insects, scalds, chemicals, or traumatism. It attends erysipelas, pyæmia, and variola. *Psoriasis* of the tongue is due to syphilis. *Chronic glossitis* depends upon local irritants, such as points and tartar on the teeth, and the use of tobacco.

Symptoms.—Tongue is dark red, swollen, painful, and may protrude from the mouth. Great pain in mastication, swallowing, and talking. Often impossible to swallow or speak. Salivation, and enlargement of cervical and submaxillary glands. Asphyxia may result from swelling. Abscesses may form. Pulse is rapid; fever and restlessness. All symptoms increase when abscess forms. In *glossitis desiccans* the surface of the tongue is fissured and lobulated, and the fissures are filled with food and debris. *Psoriasis of the tongue* presents a hard, cracked, varnished, or shiny appearance.

Pathology.—*Acute Glossitis.*—An inflammation of the parenchymatous structure of the tongue, with an exudation of serum and leucocytes into it. Resolution may be prompt, or pyogenic germs may complicate and produce suppuration. A thick, white or gray exudation of epithelium, mucus, germs, food, and filaments covers the tongue. Cicatrices or permanent thickening may remain. *Chronic glossitis* is confined to

the edges of the tongue, with redness, thickening, and hypertrophied patches.

Diagnosis.—*Acute glossitis* is readily diagnosed from symptoms given. *Chronic glossitis* may be mistaken for cancer, but the latter is much more rapid and painful, with marked cachexia.

Prognosis.—*Acute glossitis* lasts about one week and terminates in resolution or suppuration. *Chronic glossitis* rarely makes complete recovery. Glossitis occurring in the course of a fever is unfavorable.

Treatment.—*Acute Glossitis.*—Administer small doses of aconite, veratrum, acetanilide, or phenacetin, for fever. For swelling and pain, apply cold or hot washes constantly. Ice can be used freely. *Scarification* of the tongue should be deep. Calcium sulphide may prevent suppuration. When abscess is diagnosed, open freely and cleanse with hydrogen peroxide. Tonics and stimulating diet must be pushed. Impending suffocation demands free incisions in the tongue or tracheotomy.

Chronic Glossitis.—Remove cause; touch edges of tongue with silver nitrate. Solutions of tr. opii, cocaine (four per cent.), or leeches will relieve congestion and pain. The use of depressants must be guarded. Jaborandi and pilocarpine are better than quinine and may abort acute attacks. *Glossitis desiccans* is mitigated by applications of silver nitrate, but rarely cured. *Psoriasis of the tongue* requires specific treatment, as in syphilis, and local applications of carbolic acid.

NOMA.

Synonym.—Gangrene of the mouth.

Etiology.—Most common in cachectic children and convalescents from measles, scarlatina, variola, pertussis, cancerum

oris, tuberculosis, and debilitating disorders. Most common in girls from two to twelve years of age. Embolism and thrombosis. Not contagious.

Symptoms.—Commences in the cheek as a small vesicle which is filled with serum. It soon becomes black and sloughs until half the cheek and gums may be involved. Teeth drop out, and necrosis of the maxilla follows. Glands of the neck and submaxillary region are tender and swollen. Cheek is swollen, hot, and tender. There is little or no pain at first, and the child may pass the early stages without complaining. A hard nucleus can be felt in the cheek; breath is very offensive, and saliva bloody and thick. Diarrhœa is present; great thirst, debility, and emaciation.

Pathology.—Circulation to the part is cut off; nutrition ceases, and necrosis follows. When sloughing begins there is a secondary infection with germs, producing greater activity, offensive discharges, and increased phagedena. The primary lesion is a small vesicle which gets dark, sloughs, and leaves a malignant ulcer (*phagedenic ulcer*) which spreads to the surrounding tissues and causes destruction of the whole cheek and maxillary bone.

Diagnosis.—History, age, cachexia, debility, and rapidity of its course.

Prognosis.—Depends upon constitution of patient, cause, and means used to cure it. Most common termination is death.

Treatment.—Actual *cautery*, at the onset, with fuming nitric acid, galvano-cautery, hot iron, or any acid. Rich, concentrated, stimulating, albuminous diet. Free use of *stimulants*. Remove sloughs at once and treat with hydrogen peroxide, potassium chlorate, aristol, eucrophen, pyocetanin, iodoform, or burnt alum. Feed per rectum or by stomach-tube.

HEMORRHAGE FROM THE MOUTH.

Description.—Hemorrhage from the mouth is a flow of blood, venous, arterial, or capillary, from any of its tissues, and is a *symptom* of some pathological condition. It is due to mechanical or chemical injuries; plethora, hæmophilia, or scurvy; from the socket of a tooth: ulcers; varicose veins; or erosions from cancer. May be dependent upon a vicarious menstruation. *Symptoms* are those of hemorrhage. *Diagnosis* is made by direct examination of the mouth, and fatality will depend upon the cause.

Treatment.—If arterial, ligation may be demanded. Torsion and compression are effectual in many cases. Other hemorrhage is checked by Monsel's solution, alum, tannic acid, or other astringents. A four-percent. solution of cocaine stopped it in one case. If from the socket of a tooth, pack it with tannic acid. Actual cautery with the hot iron is an old and well-tried remedy. If there is great loss of blood and syncope, lower the head, give stimulants, and resort to transfusion of a saline solution or blood, if necessary. Give hot drinks internally to increase the bulk of blood. The exciting cause must always be removed if possible. Treat symptomatically.

CANCER IN THE MOUTH.

Description.—Cancer in the mouth may involve the mucous membrane lining the lips, gums, hard and soft palate, floor of the mouth, or tongue. Most common form is *epithelioma*. Mostly found on lower lip or tongue. *History* of a boring and shooting pain, accompanied later by cachexia, salivation, and formation of a cancerous ulcer. Cachexia appears

early, and the disease runs a rapid course. *Diagnosis* is easy and *prognosis* is bad.

Treatment.—*Excision*, if done early, is sometimes effectual. The whole tongue may be removed. Some authors recommend division of the gustatory nerve to relieve pain. In *epithelioma* no application is better than powdered potassium chlorate or aristol. Cures have been reported by this means, but are questionable. *Inoculation* of cancer with the germ of erysipelas is said to have cured some cases in Germany, but this remains to be confirmed. Best diet and stimulants. *Put off the use of opium* until the last, when it is most needed to give relief. Applications of jequirity are highly recommended.

PTYALISM.

Synonyms.—Salivation; mercurialism.

Definition.—*Ptyalism* is a *symptom* and not a disease, characterized by increased flow of saliva, bad breath, tenderness and swelling of the gums, with a tendency to bleed, and often accompanied by violent stomatitis.

Etiology.—Mercury; irritation of the lips, mouth, or branches of the trifacial or glosso-pharyngeal nerve; irritation of the gastro-intestinal tract by worms; mental disorders, quinsy, hysteria, dropsy, and pregnancy. It also arises from potassium iodide, pilocarpine, and may be spontaneous or idiopathic.

Symptoms.—There is a metallic taste in the mouth; gums are tender and bleed easily; teeth loosen and fall out. There is a constant flow of saliva, and six to eight pounds are secreted in one day. Tongue is swollen, indented by the teeth, and coated. Breath is very offensive. Ulcerative stomatitis with slough. Saliva dribbles from the mouth, and

patient is constantly spitting and hawking. Bowels are constipated.

Prognosis.—Duration of two or three weeks.

Treatment.—*Prophylactic.*—Be very careful in the administration of mercury and allied drugs. Correct all possible causes. Give a saline cathartic, with a small amount of opium to prevent griping. Use local washes of boric acid, alum, tannin, carbolic acid with iodine and glycerin, compound tincture of capsicum and myrrh, a solution of creolin, or potassium chlorate and iron. Wash of peroxide of hydrogen. Rinse the mouth with dilute alcohol. Give concentrated diet and avoid all irritants. Treat symptoms.

DISEASES OF THE PHARYNX.

PHARYNGITIS.

Synonyms and Varieties.—Catarrh of the pharynx; sore throat; follicular sore throat; herpes of the pharynx; tubercular pharyngitis, and pharyngitis sicca.

Etiology.—Exposure to cold, syphilis, mercury, traumatism, extension from nose or stomach, hot and cold liquids, chemicals and irritants of all kinds. It is *symptomatic* of measles, typhoid and scarlet fevers, rheumatism, erysipelas, and may be *epidemic*. Due to tuberculosis, debility, and bad hygiene.

ACUTE PHARYNGITIS.

Symptoms.—Onset with a burning feeling in one spot in the throat, increased on swallowing, which extends, covers the fauces and tonsils, causing redness and swelling. Tongue is heavily coated with a thick, white fur; great thirst and very bad breath, with dryness in the throat. Uvula is elongated, and there is a cough. Veins of the pharynx are dilated and prominent; temperature may be slightly elevated. In a few days there is a secretion of mucus from the nose and throat, and cough becomes more annoying. Inflammation frequently spreads to the eyes, nose, ears, and lungs. Bowels are constipated, but there may be diarrhœa.

Diagnosis.—Rarely mistaken. In fevers there is an eruption and other symptoms.

Prognosis.—Good; lasts about one week; may extend to other organs or become chronic in character.

Treatment.—If taken at once, in the first hour or two, when the burning is confined to one spot, an application of nitrate of silver, gr. x- $\frac{1}{2}$ i, will abort it. Cocaine acts locally and is only temporary. Ice or hot applications to the throat. One teaspoonful of liquid vaseline or cosmoline taken internally or applied to the pharynx will often prove efficacious. Dr. Waugh uses a *free chlorine mixture*, which will certainly cure if used faithfully and persistently:

R

Potassii chloratis..... 3j.
Acidi muriatici (U. S. P. not dil.) f 3jss.

Misce, tunc adde

Tr. ferri chloridi f 3ij.
Aquæ q. s. ad. f 3iv.

M. Signa. One teaspoonful, in its purity, two or three times a day. Do not drink water after taking.

Gargles of potassium chlorate, carbolic acid, silver nitrate, or tannin are all good. Dr. Garretson recommends:

R

Tr. iodi compositi..... gtt. xl.
Acidi carbolici gtt. xij.
Glycerini f 3jss.
Aquæ q. s. ad. f 3vj.

M. Signa. Use every two or three hours as a gargle or spray. May use *ad libitum*.

Insufflations of pyoctanin, or applications of a ten-percent. solution, may abort an attack. A spray or gargle of one teaspoonful of *peroxide of hydrogen* to six teaspoonfuls of water will give good results. A solution of iron and potassium

chlorate is an old but good gargle. *Small doses* of *aconite* or *veratrum* will sometimes abort it. Wine of ergot, in dram doses, is indicated where the tissues are relaxed. Give good diet, and wear flannel next the skin. Avoid exposure.

CHRONIC PHARYNGITIS.

Description.—Usually the result of repeated acute attacks. Mucous membrane is red and swollen, and the veins stand out and present varicosities. Mucous membrane is hypertrophied in patches; cough is marked, and constant desire to hawk and spit.

Treatment must be prolonged, as it is difficult to manage. Applications of nitrate of silver, gr. x-f $\frac{3}{4}$ i, alum, tannin, or iodine solutions are good. Pyoctanin, aristol, or peroxide of hydrogen, locally, are good, new remedies. Ergot has been recommended. Hydrastis, in powder, as an insufflation. Applications of glycerol of tannin constrict the relaxed membrane. *Elongated uvula* should be touched with chromic acid or caustic, rather than cutting it off. Regulate bowels. Change of climate will often benefit. Applications and inhalations of menthol.

FOLLICULAR PHARYNGITIS.

Description.—Most common in clergymen (*clergymen's sore throat*), weak and cachectic persons. Voice is rough, and the follicles stand out and may ulcerate. Tonics, iron, strychnine, cod-liver oil, and wine. Potassii chloras internally. Calomel and salines for the bowels. Applications of powdered iodoform, glycerol of tannin, or silver nitrate. Always use a salt-water douche or gargle before making an application to the throat or nose. It may be necessary to *cauterize each*

follicle with galvano-cautery or caustic. Troches of potassium chlorate or ammonium chloride.

HERPES OF THE PHARYNX.

Description.—Fever, sore throat, and painful deglutition. Small isolated or clusters of vesicles in the throat that break and leave little ulcers. These vesicles may come in crops. They must be distinguished from diphtheria, as the latter spreads faster and has more constitutional symptoms. Regulate the bowels with calomel or jalap, and give aconite for the fever. Compound tincture of benzoin, iodine, and carbolic acid make a good gargle. Mackenzie gives Fowler's solution of arsenic three times a day. Treat the ulcers as given before.

TUBERCULAR PHARYNGITIS.

Description.—This is an affection that occurs in tubercular patients, and has all the characteristic symptoms of pharyngitis. Food is often regurgitated through the nose or mouth. There are ulcers on the mucous membrane, and they tend to spread transversely rather than vertically. May involve the whole throat and nose. Cachexia, debility, and a constant fever that may run high. Dullness at the apices of the lungs, diarrhoea, and other signs of tuberculosis.

Treatment is of little avail. Give best diet and cod-liver oil. Use enema or the stomach-tube to feed, if they cannot swallow. Local applications of glycerol of morphina to soothe, gr. i-5 iii. Inhalations of medicated steam or peroxide of hydrogen give temporary relief. Koch of Berlin claims that tuberculosis can be cured by *inoculation of a viris*, but the subject remains to be given a fair test. Cases are reported greatly improved.

PHARYNGITIS SICCA.

Description.—In this condition the throat is dry. Dry cough, fever, and swollen tonsils, uvula, and pillars of the fauces. Suffocation may ensue from swelling. Tongue is broad and flabby; pulse is high. Great thirst and a nasal twang to the voice. Ear troubles may complicate it. *Hydrastis* given internally and locally is the best remedy. Iodine, hydrochloric acid, and ammonii murias. (See other forms of pharyngitis.)

PHARYNGEAL CROUP.

Description.—This affection is rarely, if ever, seen alone, but usually accompanies quinsy, diphtheria, or other forms of croup. There is a white, membranous mass on the velum palati and the posterior part of the pharynx, with all the symptoms of a severe catarrh of the pharynx and larynx.

Treatment.—Remove the membrane mechanically, or with solutions of pepsin, lactic acid, papoid, or hydrogen peroxide. Touch the ulcerated spots with silver nitrate and treat as in other forms of pharyngitis.

QUINSY.

Synonyms.—Tonsilitis; inflammation of the tonsils; amygdalitis; cynanche; phlegmonous pharyngitis.

Definition.—An acute inflammation of the parenchyma of one or both tonsils, which tends to formation of pus, accompanied by chill, rise of temperature, pain on talking or deglutition, and a nasal twang to the voice.

Etiology.—*Acute quinsy* comes from exposure to cold, pre-

disposition, acute rheumatism, sewer-gas, bad hygiene, epidemics, and diathesis. *Chronic quinsy* comes from repeated acute attacks, scrofula, teething, and is most common in the spring and fall, in males between fifteen and twenty-five years of age. One attack predisposes to another on the slightest provocation.

Symptoms.—*Onset.*—A chill or rigor, with a rise of temperature as high as 104° F. at times. Pulse is rapid, pains in the bones, anorexia, thirst, delirium, headache, dryness and aching of the fauces, and a swelling at the angle of the jaw. Great pain on every effort at swallowing. Urine is scanty, dark, and high-colored; tongue is heavily furred, and breath bad. Glands of the neck and the salivary glands are swollen. Salivation may be present. Respiration is unaffected until the tonsils become swollen, and there may then be very alarming dyspnoea. Inflammation may extend to the middle ear or other organs. One tonsil is affected at a time, then the other. Tonsil is red, swollen, tender, and covered with thick mucus. Symptoms gradually increase from three to five days, followed by resolution or suppuration. Throbbing pain, with increased fever and depression, and the abscess may then point or break into the throat, side of the neck, or, rarely, may burrow down along the neck to the pleural cavity and give rise to a pleurisy. Recovery takes place in about two weeks. If both sides are affected at once, there may be great dyspnoea, which will result in suffocation unless promptly relieved. When the abscess breaks, it may cause fatal strangulation by the pus entering the bronchial tubes; but this is rare. Slight hemorrhages from the tonsil are common. If suppuration does not take place (*blind quinsy*), it will run its course in about four days.

Chronic Tonsilitis, or Hypertrophy.—Tonsils are hard and large, and can be felt at the angles of the jaw externally.

They project into the throat; may meet and ulcerate on the opposing surfaces. They are smooth and shiny, and the follicles show. Pale red in color, with yellow or white curdy masses protruding from the follicles. Liable to frequent attacks of inflammation. Patient is pale, weak, and anaemic. Nasal voice; sleeps with the mouth open, and makes a snoring noise. Bowels are constipated, and a hoarse, paroxysmal cough is present. Chest is more or less sunken from labored respiration. Uvula is elongated.

Pathology.—*Acute.*—Inflammation of one or both tonsils and an exudation of tough, tenacious mucus adherent to their surface. Crypts of the tonsils are enlarged, and small, white or yellow masses are seen protruding from them. Lymphatic follicles swell and form small abscesses which merge into one, that points in the throat, behind the ear, or burrows along the neck to the thorax.

Chronic.—A permanent hypertrophy from chronic inflammation of the submucous tissue. Glands are very large, and often meet in the median line and ulcerate on their opposing surfaces.

Diagnosis.—*Diphtheria* has an ash-colored membrane which spreads rapidly; is unlike the curdy mass of quinsy, and has more marked swelling of the cervical glands.

Prognosis.—Good; runs its course in one or two weeks. It will either suppurate or go on to resolution. Death may ensue from breaking of abscess or swelling. *Chronic* form is not so hopeful as to cure, but can be greatly benefited.

Treatment.—*Prophylactic treatment* consists in avoiding exposure to cold or irritating causes. The use of such astringents as tannic acid and its solutions, locally, keeps the parts constricted.

Abortive Treatment.—Mackenzie recommends resina guaiaci, gr. ij, in the form of a lozenge, every two hours. Applications

of solid nitrate of silver at the onset. *Tincture of aconite*, gtt. ss, every ten minutes, until fever is broken. When due to cold, a large dose of Dover's powder, gr. x, and hot drinks, followed by a free mercurial purge. Salicylate of soda or salicylic acid is almost a specific when there is a suspicion of rheumatism. A free saline purge, followed by wine of antimony, or tartar emetic, gr. $\frac{1}{2}$ to $\frac{1}{4}$, every hour, has been recommended. Large doses of belladonna are said to abort. One third of a grain of hydrargyrum cum creta, every hour, will reduce swelling and obviate danger. *Sulphide of calcium*, gr. $\frac{1}{10}$ to $\frac{1}{4}$, every three hours, will prevent suppuration, if a good preparation is used. Emetics are used by some, but are of doubtful utility. Raymond applies pure guaiacol and follows by keeping the throat moist.

General Treatment.—Give hot drinks and gargles, and apply poultices to the angle of the jaw. Hot inunctions of ichthyol ointment, ten percent. On the other hand, pellets of ice may be used to give relief. Give a free purge of calomel and jalap to deplete. Inhalations of pure or medicated steam or peroxide of hydrogen. Scarify the tonsil deeply. Incise from within out to avoid wounding the internal carotid. Syrup of the iodide of iron is recommended. Give iron and quinine through the attack. Potassium chlorate, gr. v, every four hours. *Astringent gargles* in the early stages do good, but in the later stages they do harm. Applications of subacetate of lead, once daily, often relieve. When pus is present, incise freely and give hot gargles. Diet should consist of milk, broth, egg-nog, and wine. In the non-suppurative form, give, every six hours:

R

Magnesiæ sulphatis.....	3 ss.	
Quininæ sulphatis.....	gr. ij.	
Acidi sulphurici diluti.....	gtt. v.	M.

Chronic Tonsilitis.—Improve nutrition and regulate digestion. Cod-liver oil, iron and wine tonics. Wear flannel next the skin. Equal parts of calcium sulphide and iodoform, gr. $\frac{1}{2}$, seem to reduce the gland, as does syr. ferri iodidi. *Local excision* or application of London paste to remove the glands. Never excise unless absolutely necessary. Gangrene is prevented by free incisions. Chromic-acid gargles for their antiseptic and astringent virtues. Local applications of iron, iodine, and glycerin, or nitrate of silver, to palliate. Professor Penrose says that if a man's tonsils are excised he will be impotent and have no children. This is not wholly confirmed by statistics. Application of a mild galvanic current, positive pole to the tonsil and the negative to the side of the neck, has reduced it. Nature will sometimes relieve the size after the age of puberty has passed.

SYPHILIS OF THE PHARYNX.

Description.—Syphilis of the pharynx may appear in the form of gummatous tumors or excrescences. Small papules may appear on the tonsils. Ulcers, with a raw-meat-like appearance and irregular edges, appear on the mucous membrane. Mucous membrane of the soft palate and tonsils may ulcerate away. Deafness may occur from extension of inflammation or closure of the Eustachian tubes. The posterior part of the uvula is a common seat for ulcers and excrescences. Specific history is usually obtainable and aids in diagnosis.

Treatment.—Specific medication with mercury and the iodides. Treat gummata and ulcers with acid nitrate of mercury, galvano-cautery, and dress with some antiseptic.

HERPES OF THE TONSILS.

Definition and Symptoms.—A disease of the tonsils, characterized by the formation of little blisters or vesicles which contain clear serum. It is usually accompanied by chills, rigors, and intense pain on one side of the throat. Examination shows a crop of little vesicles on the tonsil, and these may extend to the pharynx and larynx. Pulse and temperature are high.

Diagnosis.—This condition and *diphtheria* are very much alike. Pain on swallowing is greater than in diphtheria, and there is little or no headache. No spreading membrane in herpes, and only lasts one or two days.

Treatment.—Free purgation. Fever mixture if needed. Treat as indicated in catarrh, and combat symptoms as they arise.

RETRO-PHARYNGEAL ABSCESS.

Definition.—A collection of pus in the loose, cellular, connective tissue between the posterior wall of the pharynx and bodies of the cervical vertebra, most common in young children.

Etiology.—Most frequent cause is caries of the vertebra. May occur in course of measles, scarlet fever, diphtheria, scrofula, erysipelas, or typhoid fever. May be idiopathic. Most common in infants under one year of age. Direct injury, mechanical or chemical, tonsillitis, or exposure to cold.

Symptoms.—Great difficulty in breathing and swallowing. Unable to take any solid food on account of swelling at the back of pharynx. They breathe through the mouth, and have a nasal but not rough voice. *Dyspnoea* is great, and increased by lying down. Chest and epigastrium sink from efforts at

respiration. Suffocation may ensue from swelling or breaking of the abscess. There is a hard, dry, and ringing cough like that heard in pertussis. Back of the pharynx bulges forward, is soft and fluctuating to the touch, or may feel hard. Pus may penetrate the walls of pharynx, neck, or burrow along the neck to the mediastinum. Patient may be unable to open his jaws or move the head on account of the intense pain and muscular rigidity. In the acute form there is high fever.

Diagnosis.—It closely resembles croup. *Croup* has no retro-pharyngeal swelling, and has a husky voice. Abscess has swelling and a husky voice. It is easily distinguished from swelling of the epiglottis.

Prognosis.—Favorable, if taken early, and lasts from one to three weeks. Occurring in the course of a septic fever, abscess is a bad sign and usually means death. Suffocation may ensue.

Treatment.—Open abscess at once in the median line, at its lowest point, with a guarded bistoury. A trochar and cannula may be used if there is fear of pus causing strangulation. Use gentle pressure on the abscess after it has been opened to keep it evacuated; and if cleansed with hydrogen peroxide or pyoctanin it will heal much more readily and will secrete little or no pus after the application. Use anti-septic washes and applications. Give the very best diet and stimulants. Cod-liver oil and quinine as well as the best of hygiene. Sulphide of calcium may be of benefit in one-eighth-grain doses every three hours.

ANGINA LUDOVICI.

Synonym.—Abscess of the floor of the mouth.

Etiology.—Complicates typhus fever, erysipelas, or other

septic fevers. Arises from injuries, serofula, debility, and extending inflammation, or may be idiopathic.

Symptoms.—A painful swelling near the submaxillary gland, which is hard, red, and shiny. Great pain is present when an attempt is made to open the mouth, swallow, or talk. Slight fever. Abscess may point and open into the mouth or on the neck. Death may ensue from swelling, septic poisoning, or gangrene.

Treatment.—Apply cold or hot poultices. Applications of equal parts of belladonna and mercury ointment, well rubbed in, when hot, will remove induration. Ichthyol ointment or blisters will often give good results. Evacuate pus as soon as formed, taking care to open abscess in the line of wrinkles of the face, so that a scar will not show. Sulphide of calcium reduces tendency to pus-formation.

DISEASES OF THE ŒSOPHAGUS.

ŒSOPHAGITIS.

Etiology.—Chemical, mechanical, or thermal agents. Hot water; corrosive poisons, such as nitric acid, sulphuric and carbolic acids, ammonia, and caustic lye. Foreign bodies, pressure of tumors or aneurism, heart-disease, extension of inflammation, or cancer.

Definition.—An inflammation of the mucous and submucous tissues of the œsophagus, characterized by pain, difficulty on swallowing (*dysphagia*), hiccup, fever, and a burning pain between the shoulders and behind the sternum.

Varieties.—(1) Follicular; (2) croupous, which is rare; (3) pustular, in smallpox or tartar-emetic poisoning; (4) ulcers; (5) submucous inflammation; (6) burns.

Symptoms.—Since there is little sensibility in the œsophagus, there is not much pain. A burning, dull pain felt between the shoulders and on the chest behind the manubrium sterni. Food cannot be swallowed, but is regurgitated with a bloody mucus. *Hiccup* is a constant symptom. Fever varies with inflammation. Dry, burning sensation in the throat. Ulcers may form, and are recognized by localized tenderness when the probang is passed. Perforation may take place.

Pathology.—That of any inflammation.

Prognosis.—May terminate in slow, complete recovery or in stricture from contraction of cicatricial tissue.

Treatment.—Remove any foreign bodies with proper surgical means. In case of corrosive poisons, give morphina, gr. $\frac{1}{2}$ to $\frac{1}{16}$, with bismuth subnitrate, gr. v–xx, every three or four hours, to control pain and burning. When catarrh is acute, use ice and frequent sips of cold water. Give the blandest liquid diet, and nourish by enema or stomach-tube. If the ulcers can be reached with a tube or brush, touch them with silver nitrate, gr. xx– $\frac{3}{4}$ j. When inflammation subsides, pass a bougie regularly for six months or a year to prevent stricture. Mild galvanization with a bougie electrode is of great service.

STRICTURE OF THE ŒSOPHAGUS.

Definition.—A narrowing or obstruction of the normal caliber of the œsophagus, that is either spasmodic, organic, or malignant in character.

Etiology.—Cicatrices, pressure of enlarged glands, aneurism, abscesses, syphilis, lodgment of foreign bodies, chronic inflammation, and cancer; hysteria, hypochondriasis, nervous and psychic causes. Sometimes congenital.

Symptoms.—*Spasmodic or functional stricture* is due to a spasmodic contraction of the œsophageal muscle under a state of hysteria or hypochondriasis. Not constant, and in the intervals patient can take food. During spasm, food sticks and causes choking pains in the œsophagus, and finally regurgitation of food, with other hysterical manifestations. A bougie can be passed after a few days' persistent use.

Organic stricture is most common in the lower third. There is great difficulty in swallowing liquids, and ultimately no food can be taken. A bougie will pass with difficulty if incomplete, or will not pass at all if complete. Patient wastes and loses flesh.

Malignant stricture of the œsophagus is primary. Epithelioma is the most common form, in the middle of the tube or at the cardiac orifice. Foul eructations of food and bloody mucus, with marked cachexia and wasting.

Diagnosis.—Confirmed by passage of the bougie.

Prognosis.—Usually grave, and a cure is rare.

Treatment.—In the *spasmodic* form, gain the confidence of the patient and make a marked mental impression. Correct secondary troubles and pass the bougie frequently. Use an electric battery. Bromides and sedatives may do some good, but change of scene and mental impression will accomplish more.

Organic stricture, due to inflammation, demands frequent passage of the bougie. Better than this, and combined with it, is *electrolysis*. The positive pole is placed to the left of the spine, at the ninth rib, while the negative electrode is gently introduced to the seat of the stricture, and a mild galvanic current used for three minutes at a time until it passes it. *Alimentation* is effected through the stomach-tube or rectum with peptonized foods, taking care not to give more than four ounces at one time, after the bowels have been emptied. A larger quantity will irritate and prevent absorption.

Malignant stricture is hopeless. Surgical operations, such as gastrotomy, gastrostomy, œsophagotomy, and others, are resorted to. A bougie should not be used in case of cancer or aneurysm, as rupture is liable to follow. In *aneurysm*, treat with potassium iodide, aconite, and surgical means.

DILATATION OF THE ŒSOPHAGUS.

Description.—This is a comparatively rare condition, and consists of a pouch or dilatation in a portion of the œsophagus, with or without stricture. It may be due to pressure,

adhesions, or paralysis. Most commonly associated with stricture. It is characterized by a regurgitation of food and alkaline mucus. The trachea or vessels of the neck may be compressed. Difficulty in swallowing. There is a swelling in the neck, most marked after eating and diminished after vomiting or pressure. Loss of flesh and strength.

Treatment.—Of little avail. Astringents have been recommended. Galvanism or faradism by means of an electrode bougie furnishes most hope of restoring muscular tone to the affected part. Nourish by stomach-tube or rectal alimentation.

DISEASES OF THE STOMACH.

ACUTE GASTRIC CATARRH.

Synonyms.—Gastritis; acute indigestion; bilious fever; gastric fever; catarrh of the stomach.

Definition.—An inflammation of the mucous membrane of the stomach, characterized by diminished, then increased, secretion, with impairment of digestive function.

Etiology.—Overtaxed physiological action, debility, fevers, age, quality and quantity of food, improper mastication and ensalivation, over-feeding, hot drinks, and irritants. Eating ice-cream after meals, drinking ice-water, or catching cold. Opium, arsenic, tartar emetic, worms, impoverished or diminished gastric juice, dentition, improper hygiene, predisposition, or extension from other parts. Sometimes epidemic.

Symptoms.—Patient is dull and fretful; waves of heat and cold; cold extremities. General malaise, thirst, headache, and tenderness and fullness in the epigastric region. Belch fetid gas and sour liquid. Epigastrium is prominent; tongue is heavily coated with a yellowish-white fur, and red at the edges. Breath very bad; persistent nausea and vomiting of undigested food, mucus, and, finally, bile. Bowels may be loose or constipated. Pulse weak and fluttering; intolerance of light, and a tendency to *stomachic vertigo*. Ingestion of food increases it. There is very slight fever, but in children it may run very high. Urine is loaded with lithates, pigment, or uric acid. There may be cerebral trouble in the aged.

Another form is that in which there is a severe attack of headache, with violent retching and vomiting of bilious matter. It passes away in a few days, and is known as *bilious or sick headache*.

Pathology.—Mucous membrane is dark red; may be softened in spots, and is covered with thick alkaline mucus or muco-pus. Gastric juice is diminished or entirely suppressed, and the subglandular and submucous tissues are infiltrated. Fermenting food is often found in the stomach, due to the *bacillus lacticus*.

Diagnosis.—In *simple dyspepsia*, acids and spices give relief; in *gastric catarrh* or *structural lesions* they cause pain. *Typhoid* and *remittent* fever show their characteristic points, but may be confounded at first. *Peritonitis* is more rapid and severe; collapse is early, and pain is more diffuse.

Prognosis.—When uncomplicated, is good. One or two weeks' duration, or may become chronic.

Treatment.—*Diet* should be regulated first. When there is vomiting of sour and undigested food, mixed with mucus, give an emetic of pulv. ipecacuanhæ, gr. x-xv, in warm water, to which has been added a little sodium bicarbonate. Wine of antimony or zinc sulphate may be used as emetics, but must not be repeated. Follow this with

R	
Tr. nucis vomicæ.....	℥ j-iiij.
Sodii bicarbonatis.....	gr. iv-vj.
Spts. chloroformi.....	℥ j-iiij.
Aquæ.....	q. s. ad. f 3j.

M. Signa. Three times a day, to restore the mucous membrane to health. (E. Smith.)

If the bowels are involved, give castor-oil or syr. rhei aromaticus. Alkalies, glycozone, or hydrogen peroxide will coun-

teract acidity. Severe cases may require silver nitrate or oxide. If emetics are not indicated, begin by giving

R

Sodii carbonatis 3ij.
 Vini ipecacuanhæ..... f3ij.
 Ext. rhei fluidi f3ij.
 Syr. rheiq. s. ad. f3ij.

M. Signa. A dessertspoonful in a tea-cup of hot water one hour before meals. (Waugh.)

This will clear the stomach of mucus, and acts best in sub-acute and chronic forms. It is sometimes necessary to aid digestion by one or all the digestants. In vomiting, with violent headache (*bilious attack*), nothing will act better than

R

Cupri arsenitis..... gr. 1/100.
 Ext. nucis vomicæ fld..... gtt. viij.
 Aquæ f3ij.

M. Signa. One teaspoonful every ten or twenty minutes until relieved.

Vomiting will cease after a few doses, and headache will disappear. Place mustard over the stomach at the same time, and rest in bed. Follow with a free calomel purge. Bismuth, calomel, sulphocarbolate of zinc, liq. arsenii, and a host of other remedies are recommended to relieve vomiting and diarrhœa. Glycozone, 3i-ij, is healing. Small doses of opium or morphina will relieve pain. When gastritis is complicated by fever, give fluids, such as rice-soup, hydrochloric acid and the carbonated waters—seltzer, vichy, or soda waters. *Avoid* all spices, alcohol, and condiments. Fermentation will be checked by sulphocarbolate of zinc, gr. iij, every three hours, or hydrogen peroxide, 3ss-j, in water, every three to four hours. Rheum, with an alkali; salol, gr. v, every two hours; carbolic acid, aristol, or iodoform also check fermentation.

During convalescence, give tonics of iron or glycerol of the phosphates to avoid syrup in ordinary preparations.

Diet.—At first give unsweetened barley-water, rice-water, and fresh curds and whey. Good broths, to which dry toast may be added sparingly. Later, milk with lime-water. Avoid sugars, pastries, potatoes, or starches. Later, a little fresh chicken or mutton may be taken sparingly. Dilute hydrochloric acid, gtt. xv–xx, in a glass of water, to be sipped at intervals during the meal, will stop lactic-acid fermentation. In *pyrosis*, subnitrate of bismuth, *ad libitum*, is the best remedy.

CHRONIC GASTRIC CATARRH.

Synonyms.—Chronic gastritis; drunkard's catarrh.

Definition.—A chronic inflammation of the mucous and submucous membranes of the stomach, characterized by disordered digestion, tenderness on pressure, and atrophy of the glands of the stomach. It is *not a chronic dyspepsia*, but may be one of the results of this condition.

Etiology.—Excessive use of alcohol; improper foods and condiments; frequent acute attacks; and cancer. May be *secondary* to diseases of the heart, liver, lungs, pleura, kidneys, or portal system, causing a congestion of the venous system of the stomach.

Symptoms.—Pain and distress immediately after eating. *Pyrosis*, and belching fetid gas; appetite may be ravenous, especially in women. *Early morning vomiting of glairy mucus* is characteristic in drunkards. Constipation is the rule. Anorexia; thirst; tongue coated in center and red at tip and edges; lips dry and cracked; bad breath; vertigo; headache; weak heart; and insomnia. Some local tenderness in the epigastrium.

Pain is burning in character at the pit of the stomach,

and often reflected between the shoulders. Epigastrium is distended. Nervousness, depression, and emaciation ensue. Pharyngeal and bowel troubles complicate it. There is a sympathetic or *stomach cough*.

Pathology.—The mucous walls of the stomach are coarse, thickened, and gray or brown. *Pigmentation* is most marked at the pylorus. Walls of the stomach covered with tough mucus. Obliteration and atrophy of the peptic glands in places; ridges radiate through it, giving rise to a *mammillated appearance*. Sometimes the stomach resembles a fibrous bag. *Mucus* prevents food from coming in contact with the gastric walls; hence the necessity for its removal before normal digestion begins.

Diagnosis.—*Atonic dyspepsia* has no structural lesion; no vomiting of glairy mucus; no constant local tenderness; no fever; and little pain after eating. From *cancer* and *ulcer* (see *Gastric Cancer*).

Prognosis.—*Not fatal*. May terminate in ulceration or stenosis of the pylorus. We cannot restore destroyed glands, but can retain those left.

Treatment.—*Avoid* alcoholics, spices, and condiments at the earliest time possible. Diet of toasted bread, milk, and foods that have been predigested with pepsin, diastase, or pancreatin. Rest the stomach as well as the body. To get rid of mucus, the prescription on page 195 should be used until all is taken. Follow this with:

R_x

Argenti oxidi..... gr. 1/4.

Zinci oxidi gr. ij.

Misce. Fiat pil. No. 1. Signa. Three times, daily, fifteen minutes before meals, for two weeks.

Papoid, gr. i-ij, is one of the best remedies in gastric catarrh, as it will digest mucus if given previous to a meal and

followed later by a glass of hot water. Pure pepsin must be used with caution, as it will often digest the walls of the stomach. Lactopepsin is best and safest. Liq. potassii arsenitis, gtt. i-ij, is highly recommended. Morphina or the opiates, with belladonna, for pain. Washing out the stomach (*larage*) with antiseptic washes is recommended to remove mucus, but is unpleasant, and in many cases unnecessary, as other methods will answer. Glycozone, 5 i-ij ter die, is highly recommended for its healing power. Each case has its own peculiarities and requires symptomatic treatment; no set rule can be given.

When catarrh is *secondary* to other troubles, treat the cause and remove it if possible.

GASTRITIS PHLEGMONOSA.

Synonyms.—Phlegmonous gastritis; acute suppurative gastritis.

Definition.—An acute, diffuse, suppurative inflammation of the mucous and submucous tissues of the stomach, rarely seen and rapidly fatal. It occurs primarily or secondarily.

Symptoms.—There is very *high pyæmic fever*: quick pulse; bad breath; coated tongue; very severe, constant, and persistent pain in epigastrium, and persistent vomiting of mucus or pus. May be sudden collapse from perforation. Abscess may be felt as a tumor, and may break into the stomach, peritoneum, or even perforate the diaphragm or skin.

Pathology.—Mucous membrane is red and thickened. *Abscesses* are found in the submucous tissue, and an infiltration of pus into surrounding structures. Muscular coat is involved, and stomach may adhere to surrounding organs. Sinuses and perforation may be found. Ulcers heal by cicatrix. The Germans compare it to phlegmonous- or pseudo-erysipelas.

Diagnosis.—Persistent pain, high pyæmic fever, and vomiting of pus at times. Rarely possible to diagnose it during life.

Prognosis.—Usually fatal, but may recover.

Treatment.—Opium, to relieve pain. Cocaine and glycozone are recommended. Check vomiting with appropriate remedies. No food or water should pass the stomach, but patient should be fed per rectum. Quinine, and in some cases alcohol, per rectum. *Give the stomach absolute rest*, and avoid all depressants. If abscess is diagnosed, operate at once.

TOXIC GASTRITIS.

Synonyms.—Acute gastritis; gastritis from poisons.

Definition.—An acute inflammation of the mucous, sub-mucous, and muscular walls of the stomach, due to the action of some corrosive poison, and characterized by intense pain and vomiting of bloody matter and often portions of the eroded mass.

Symptoms.—Great anxiety, fear, pallor, and cold extremities, with cold sweat and irregular action of the heart. Breathing is rapid and shallow. Severe burning along the œsophagus and in the stomach. Often vomiting of bloody mucus or masses of the eroded mucous membrane. Thirst and intense burning in the throat. Patient may go into collapse and die, or gradually recover with permanent impairment of part of the stomach, œsophagus, or both. Fatal hemorrhage may ensue from erosion of a vessel.

Pathology.—Mucous membrane of the mouth, throat, and stomach is red and injected. Pulpy spots and erosion of the mucous membrane. May be perforation of the walls of the stomach. Glands are destroyed in places, and the peculiar characteristics of each poison are noticed. *Corrosive acids* pro-

duce slough with hard eschar. *Alkalies* cause a pulpy appearance. *Arsenic* leaves white, corroded spots that are covered with white powder and slough, and have red folds radiating from them. *Ethereal oils* give catarrhal symptoms, sudden pain in the abdomen, and vomiting. *Sulphuric acid* chars black. *Nitric acid* stains yellow. *Carbolic acid* stains white.

Prognosis.—Grave, and depends on the character, amount of poison taken, and the antidotes given. Stricture of the œsophagus is a common sequel.

Treatment.—Take in the whole situation at a glance and note surroundings; take possession of all empty bottles, and preserve all vomited matter for future examination. *Antidotes* in corrosive poisons are usually useless, as the damage is done by the time you arrive or administer them. Alkalies will neutralize acids. *Arsenic*, which is slowly absorbed, requires administration of sesquioxide of iron, followed by a free emetic of ipecac. May use stomach-pump. In *corrosive acids and alkalies, never give water*, but administer free draughts of oil. For the *pain*, give morphinæ sulphas, gr. $\frac{1}{16}$ to $\frac{1}{4}$, and bismuthi subnitratis, gr. v–xx, every three or four hours, as it relieves almost immediately. Ice, internally and externally, relieves pain. Cocaine or glycozone. Give the stomach absolute rest and feed per rectum. Combat subsequent inflammation as already indicated. Stimulate freely, if indicated. Treat each case according to the poison taken. Symptomatic treatment.

GASTRIC ULCER.

Definition.—A solution of the continuity of the walls of the stomach, that may involve one or more coats, characterized by peculiar, localized pain, vomiting of blood, and perverted function of digestion.

Etiology.—Ulcer is most common in women at the age of twenty-one years, and rare in children. Occlusion of a twig of an artery from emboli; due to disease of the heart, lung, kidney, or liver. Obstruction of any kind to the circulation. Gastric catarrh, anæmia, chlorosis, lack of nutrition, chronic congestion, vicarious menstruation, erosions from poisons, portal obstructions, concentrated forms of pepsin, and gastric juice itself. Amyloid degeneration of the vessels.

Symptoms.—Indigestion and its symptoms. Usually associated with anæmia and gastric catarrh. *The two characteristic symptoms are pain and vomiting.*

Pain is rarely absent; is persistent in the epigastrium in one spot; increased by pressure and taking food; is severe, gnawing, paroxysmal, and radiates between the shoulders, down the spine, or behind the ensiform cartilage. It is reflected to the right or left hypochondrium or the lower dorsal vertebra, and worst fifteen minutes after eating. Paroxysms are severe and last several hours or days. Pain may come on after eating or between meals. The recumbent posture affords slight relief. Patient sighs, groans, and is relieved after vomiting. Increased pain immediately after taking food indicates ulcer at the cardiac orifice; when pain comes on after an hour or more, it is at the pylorus.

Vomiting is as constant as pain, and occurs at once after eating if the ulcer is at the cardiac end, but if at the pyloric, will not occur for a few hours. The *vomited matter* contains pure red or clotted blood; or, if it remains in the stomach some time, is black or like coffee-grounds. Blood may pass per rectum as black, tarry masses. Tongue is red and smooth, and there is great thirst. *Gastralgia* is much increased by taking food. Debility and no fever. Appetite is often unimpaired. Constipation. Perforation causes violent peritonitis and death. Gastric ulcer may lie latent and cause no symp-

toms that will lead to its detection until sudden hemorrhage or perforation occurs.

Pathology.—Single or multiple ulcers are found at the pylorus or back of the stomach. They are circular, oval, and funnel-shaped, with thin edges at first, but afterward thickened. They measure from one quarter to one inch in diameter. One or more coats of the stomach are eroded, and may perforate the diaphragm, peritoneum, or the skin, giving rise to a gastro-cutaneous fistula which may remain open for years. May be adhesions to other organs. Eroded vessels and general inflammation around the ulcer. Cicatrices of healed ulcers are sometimes found. *Pain* is due to the action of acid gastric juice or localized peritonitis. *Hemorrhage* comes from eroded vessels. *Old ulcers* may become cancerous in the aged. The exact *causation* of an ulcer is not fully explained.

Diagnosis.—Made from age, vomiting of blood, peculiar, localized pain, and absence of tumor. (See *Cancer*, p. 205.)

Prognosis.—Must be guarded, but most cases recover. May be obstruction of the pylorus, fatal hemorrhage, or perforation. Death ensues from exhaustion, hemorrhage, or peritonitis. Lasts for a few months or continues for years.

Treatment.—*Diet.*—When food can be retained, give the most agreeable diet in small quantities. No sugars, spices, condiments, hot drinks, or alcoholics, as they cause pain. White of egg, beaten up in pure, cold water, is good. Peptonized milk, curds and whey, rice, corn-starch, tapioca, and sago are all excellent articles of diet. Raw beef, reduced to a pulp. If stomach is irritable, give absolute rest and feed per rectum. Great relief is obtained by the administration of morphina, gr. $\frac{1}{16}$ to $\frac{1}{4}$, or atropinae sulphas, gr. $\frac{1}{120}$, or powdered opium and soap in pill form. Cocaine and iodoform are of little benefit. Oxide of silver, gr. $\frac{1}{4}$, with oxide of zinc, gr. ij. in pill form, before meals and at bedtime, gives great relief. Nitrate

of silver, gr. $\frac{1}{2}$; bismuth subnitrate, gr. xx ; glycozone, f 3 i-ij ; or liq. potassii arsenitis, gtt. i-ij, do good. Do not give silver too long on account of *argyria*. Blisters and local irritation over the epigastrium often relieve. The Germans use the alkaline carbonates or sodium sulphate. Sodium is not suitable in anæmic cases, but will answer in plethora. Carlsbad water will check acid secretion. Vomiting must be controlled and cathartics cautiously used. Rectal injections of cold water. Salts or compound licorice-powder should be given the preference to open the bowels.

In *hæmatemesis* give ice internally and apply it over the epigastrium. Acetate of lead, iron, alum, turpentine, or tannic acid internally, or ergotine, gr. i-ij, hypodermically. Zinc sulphocarbolate, gr. v, every three hours, stopped severe hemorrhage in a number of cases. When due to *ricarious menstruation*, give emmenagogues before the period. Marriage is said to cure some cases. In *perforation*, put patient on opiates and keep quiet in bed. When there is a *syphilitic history*, potassium iodide will relieve when all other remedies fail.

Lavage is highly recommended by later writers and clinicians. Use a solution of sodium sulphate, chloride, biborate or bicarbonate, 3 i-ij in Oij of warm water. Antiseptic solutions are resorcin, one percent. ; boric acid, one percent. ; creosote, carbolic acid, or creolin, one percent. Surgical interference may be necessary in perforation.

GASTRIC CANCER.

Synonyms.—Carcinoma, or cancer of the stomach.

Definition.—A malignant growth in the stomach occurring after the fortieth year, characterized by cachexia, localized pain, vomiting, and tumor, and terminating fatally.

Etiology.—Most common, after the fortieth year, in women. Hereditary. Gastric ulcer and all irritants in those who have a tendency to it. Secondary to other cancers, but mostly primary.

Symptoms.—Sense of pressure and fullness in the epigastrium; œdema of the ankles; dyspepsia; cachexia; anæmia and marasmus. *Vomiting* occurs immediately after eating if at the cardiac end; or, if at the pyloric, vomiting takes place in a few hours. Regurgitation of food indicates stricture, dilatation, or ulceration of the cardiac orifice. Vomited matter consists of mucus, sour liquid, and the characteristic *coffee-ground vomit*. *Hemorrhage* is frequent and in small amounts. Profuse hemorrhage indicates ulceration. There is an *absence or diminution of hydrochloric acid* in the secretions of the stomach.*

Pain is constant, dull or lancinating, in one spot, and is independent of eating. Temperature is elevated at times. *Tumor* in epigastric region is the most certain sign, is the size of a pigeon's egg or larger, and is *not very sensitive* to the touch. A medullary tumor is nodulated. Percussion is not clear. Dilatation or involvement of other organs is common. Skin is a dirty-white or fawn color. Colloid cancer gives rise to constipation and ascites. Tongue is red and dry, and loss of flesh and strength is rapid. Death occurs from peritonitis, hemorrhage, or exhaustion, in six months to two years.

* *Günzburg's Test for Free Hydrochloric Acid.*—Mix phloroglucin, two parts; vanillin, one part; absolute alcohol, thirty parts. Filter gastric contents, and to one drop, on a white plate, add one drop of this solution; evaporate to dryness over a flame, and a rose-red color appears at the edge if free acid is present. Free acid is also demonstrated by tropæolin or Congo paper.

Lactic acid is shown by taking one or two drops of tr. ferri chloridi and ten or twenty drops of a five-percent. solution of carbolic acid, and dilute to an amethyst-blue with water. Add gastric fluid, and, if lactic acid is present, it is changed to a clear lemon-yellow.

Pathology.—The stomach is the most frequent seat of cancer; is *primary* or *secondary*; most common at the pylorus. Scirrhus is most usual, medullary next, and colloid least common. Colloid cancer causes a diffuse degeneration, and may extend to the intestines and cause atrophy of the cardiac end of the stomach. Hard, infiltrated nodules or ulcerated masses are found. Pylorus may be obstructed and stomach dilated. Glands of the stomach are infiltrated, and the mucous membrane is hypertrophied. Begins in submucous tissue and spreads. Vomiting is due to products of disease.

Diagnosis.

CHRONIC GASTRIC CATARRH.	GASTRIC ULCER.	GASTRIC CANCER.
Occurs at any age.	Young adults.	After forty years.
Pain slight and constant; slightly increased by food; general tenderness, not localized.	Pain increased fifteen minutes after eating; localized and tender to pressure; radiates to back and chest.	Constant boring, dull, or lancinating pain, not increased by food; not tender to pressure.
Vomiting at times.	May or may not vomit.	Vomiting is a constant symptom.
Hemorrhage is rare and very slight.	Profuse hemorrhage.	Frequent hemorrhage in small amounts. Coffee-ground appearance.
No fever.	No fever.	Attacks of fever.
No cachexia.	No cachexia.	Marked cachexia.
Runs long course. Curable.	Curable. May last five years.	Fatal in one or two years.
No tumor.	No tumor.	Usually tumor.
Constipation.	May have constipation.	Obstinate constipation.
No dropsy.	No dropsy as a rule.	Usually dropsy.
Hydrochloric acid present.	Hydrochloric acid present.	Absence of free hydrochloric acid.
Symptoms of indigestion.	Slight indigestion.	Indigestion, flatulence, and marked acidity.

In examining for tumor, lay patient on his abdomen. *Aneurysm* and other tumors have their peculiar characteristics.

Prognosis.—Bad, and *all cases die* in from six months to two years.

Treatment.—Cundurango was recommended as a cure, but will only palliate. Resort to concentrated enema to sustain nutrition. Conium, Cannabis Indica, alcohol, ether, bromide of ethyl, and chloroform should be tried before resorting to opium. *Give the patient his anæsthetic*, with instructions how to use it to relieve pain. Counteract acidity of stomach. Aloes or colocynth for constipation. Minute doses of carbolic acid or arsenite of copper and nux vomica to relieve vomiting. Charcoal, Fowler's solution, or mercury bichloride are good.

Six surgical operations have been done to prolong life for a short time. Make patient as comfortable as possible.

DILATATION OF THE STOMACH.

Definition.—An increase in the normal capacity of the stomach, characterized by symptoms of indigestion, with attacks of vomiting at intervals of a few days.

Etiology.—Pyloric obstruction. An acute form is due to over-distention by gas or liquid.

Symptoms.—Marked symptoms of indigestion and gastric catarrh. Large eaters as a rule. Sense of fullness or weight in epigastrium. *Vomiting* every few days or oftener, and an immense quantity of partly digested food, taken days before, is thrown up, mixed with slime, mucus, or blood. Increased tympanites, and a peculiar sound on swallowing; also succussion splash. Bowels constipated; patient emaciated; epigastric region prominent, and *tumor* felt at pylorus. Rumbling of the bowels and symptoms of causative trouble.

Pathology.—Walls of stomach are thickened or unusually thin. Pylorus is partially or entirely closed by a cicatrix,

thickened mucous membrane, or cancerous growth. Normal rugæ are obliterated. Glands of stomach are atrophied or obliterated. Spores of yeast-plant are found in the stomach and vomit. Condition of chronic catarrh.

Diagnosis.—When cause is evident, it is not difficult. Distend the stomach with gas, and note percussion-area increased. Vomiting is characteristic.

Prognosis.—Not encouraging. Die of causative disease or starvation.

Treatment.—In acute dilatation, remove the liquid or gas at once by a stomach-tube. *Frequent lavage* with antiseptic solutions is indicated and gives most relief. *Dry food* in small quantities, predigested, and accompanied with an anti-ferment. Limit amount of liquids. Strychnine to tone the stomach. Galvanism or faradism. Charcoal, bismuth, and antiseptics all do good. Salines such as magnesiæ sulphas or Carlsbad salt. Surgical interference when indicated.

GASTRIC HYPERTROPHY.

Synonyms.—Gastric induration; fibroid induration; cirrhosis of the stomach.

Description.—An organic disease of the stomach in which its walls are uniformly thickened and capacity diminished. Rarely seen. Coats are from one-half to an inch and a half thick, and capacity about four or five ounces. Causation and symptoms are obscure. A diffuse tumor is felt in the epigastrium. Commonly affects pylorus and causes obstruction. Non-malignant. It may be a nucleus from which peritonitis will start. Ascites complicates. May have slight hemorrhage, with coffee-ground vomit. No curative treatment is known.

HÆMATEMESIS.

Synonyms.—Gastrorrhagia; gastric hemorrhage; hemorrhage from the stomach.

Definition.—*Hæmatemesis* is a term used to designate the vomiting of blood, and *is only a symptom* of disease.

Etiology.—Rupture of vessels; venous congestion; portal obstruction; diseases of heart and liver; varicose veins and aneurysms; hemorrhagic diathesis; ulcers, cancer, corrosive poisons, foreign bodies, or direct injury. Anæmia, scurvy, malaria, yellow fever, vicarious menstruation, and numerous other causes.

Symptoms.—Sense of pressure and constriction in the epigastrium; dizziness, fluttering pulse, and sense of syncope when much blood is lost. Sudden rising causes syncope—often fatal. Vomiting of blood or contents of stomach. May be streaks of blood, bright red and clotted, or dark and like coffee-grounds. Blood may pass by bowels as black, tarry masses (*melæna*).

Diagnosis.—*Hæmatemesis* is preceded by faintness, pallor, fullness in epigastrium, vomiting of blood mixed with food, and black, tarry stools.

Hæmoptysis, hemorrhage from lungs, begins suddenly with coughing up frothy blood, not blackened, and auscultatory symptoms. Bloody expectoration remains several days.

Prognosis.—Death is not a frequent consequence, but may occur from hemorrhage or syncope.

Treatment.—*Treat the cause.* Internally, for hemorrhage, give ice, tannic acid, alum-whey, sulphocarbolate of zinc, gr. v-x, acetate of lead, gr. i-iiij, with opium, gr. $\frac{1}{4}$, iron salts, dilute sulphuric acid, turpentine, or other astringents. Hypodermics of ergotine. Apply ice to the stomach. Give morphia hypodermically to quiet patient. Cannabis Indica will

answer. Treat *syncope* as indicated on page 212. Congestive hemorrhage requires active purgation. Over-activity of heart must be controlled by aconite. Allow no food except per rectum. Regulate bowels. Severe vomiting is controlled by tr. ipecacuanhæ, ℥ ii-iv, bismuth, sulphocarbolate of zinc, or arsenite of copper. After-treatment is governed by causation.

GASTRALGIA.

Synonyms.—Cardialgia; neuralgia of the stomach; gastrodynia; stomachic colic.

Definition.—A severe, paroxysmal pain in the stomach, due to hyperæsthesia of its sensory nerves.

Etiology.—Chlorosis, anæmia, hysteria, malaria, lithæmia, gout, acidity of stomach, cold drinks, worms, coffee or tea, articles of diet, or may be a true neuralgia.

Symptoms.—*Paroxysms of severe pain*, independent of taking food, lasting from a few minutes to hours, with intervals of rest. Fullness or pressure over epigastrium. Extremities cold; abdomen tense; and pain somewhat relieved by pressure. Diarrhœa and colic. It is easily induced by the emotions. *Sympathetic pain* under sternum is often felt. Reflex movements of the abdomen; cold perspiration; tendency to vertigo; and a slight cough. Vomiting causes relief. Urine is high-colored.

Diagnosis.—*Gastric ulcer* has constant, localized pain, with vomiting of blood and catarrhal symptoms. *Cancer* has cachexia, tumor, and peculiar vomiting. *Myalgic pain* is less severe, and increased by pressure. *Intercostal neuralgia* presents points of tenderness along the course of a nerve; is unilateral, and shows no stomach symptoms.

Prognosis.—Not encouraging. Not fatal or dangerous to life. Sometimes curable.

Treatment.—*Hysterical patients* require mental impression, change of scene and occupation. *Antispasmodics* give temporary relief, but will not reach the trouble. Leeches, electricity, and massage will do good as long as they are novel. *Asafoetida* sometimes cures. *Never give narcotics or alcohol* to these patients, as they easily contract the habit. *When pain becomes severe, use anæsthetics.* Treat any disorder from which it may arise. Regulate diet and bowels. Fowler's solution, long continued, answers nicely.

DYSPEPSIA.

Synonyms.—Atonic dyspepsia: indigestion; pyrosis; heartburn; nervous dyspepsia.

Definition.—Dyspepsia is an indigestion of food without structural lesion. Term means primarily painful digestion.

Etiology.—Improper mastication and ensalivation; drinking water to moisten and wash down food; ice-water and ice-cream; improper diet and over-feeding; excessive use of coffee, tea, tobacco, and alcohol; lessened peristaltic action and exercise; hereditary; decreased or diluted gastric juice; anæmia, chlorosis, and fevers.

Symptoms.—Heaviness, weight, and fullness in epigastrium after eating, followed by belching wind and sour eructations (*heartburn*). Tongue is clean, breath is pure, and appetite uncertain. Marked nervous symptoms in some cases. Flatulence, and vomiting of sour and undigested food. Increased flow of saliva; bowels constipated, or may have diarrhoea. There is a burning pain at the pit of the stomach after eating. Insomnia, drowsiness, headache, forgetfulness, palpitation of the heart, loss of flesh, and anæmia are characteristic symptoms. There is a desire for condiments and spices. If allowed to continue, there are symptoms of catarrh.

Diagnosis.—*True dyspepsia* is not a common disorder, and, too frequently, cases of gastric catarrh are treated and diagnosed for it. *Structural lesions* give pain when spices are taken, while dyspepsia does not.

Prognosis.—Good. It is curable.

Treatment.—Regulate diet and select blandest and most easily digested foods. *Insist on proper mastication* of food and *forbid* the use of *drinks at meals*. Forbid diet of tea and toast. Give *malt-extract* for indigestion of starches, *pepsin* for albumens, and *pancreatin* for fats. Eructations of fetid gas demand pancreatin. *Forbid spices or condiments*. If the structure of the stomach is impaired, give wine of rhubarb, ʒss, with quinine, columbo, quassia, or nux vomica. In the aged, where there is lack of peristaltic action, give nux vomica. Oxaluric dyspepsia demands alkaline salts, cold baths, and restriction of the diet. Tonics, in this condition, are injurious. *Anæmia* should receive iron or a natural chalybeate water. *Hydrastine* will compel a peptic gland to secrete. No remedy will settle nerves and restore their equilibrium better than *capsicum*. *Rhubarb* is an excellent remedy to tone the stomach. Ipecac, gr. $\frac{1}{2}$ to $\frac{1}{6}$, is good. *Tr. lobelia*, gtt. v, will dry up secretion. Hydrochloric acid, dilute, gtt. x, with meals, or hydrogen peroxide prevents lactic-acid fermentation. Sodium bicarbonate, magnesii carbonas, charcoal, or lime-water will overcome acidity. Best hygiene, attention to diet and mastication, and as little medicine as possible constitutes the main line of treatment.

STOMACHIC VERTIGO.

Synonyms.—Syncope ; fainting ; vertigo ; giddiness ; light-headedness.

Definition.—Vertigo is a transitory loss of consciousness,

complete or partial, characterized by extreme pallor of the skin, a fullness in the head, sensation of falling, weakened heart-action, and sickness of the stomach.

Etiology.—Over-eating, starvation, fright, fear, occupation; psychological causes; heart, liver, stomach, or kidney disease; gout, lithamia, debility, over-work, defects of vision, laryngeal vertigo, constipation, and other causes. Loss of blood and shock. The two classes of vertigo are *stomachic vertigo* and *cerebral vertigo*.

Symptoms.—Perspiration on the forehead; great pallor of the skin; weakened heart-action; queer sensation in the head; numbness; cloud rising before the eyes; see sparks and hear noises; fear of falling; thirst and a sensation of floating; and, finally, a loss of consciousness accompanied by falling. An attack may last for one minute or longer. Dull, heavy headache, with symptoms of indigestion.

Treatment.—*Preventive.*—Give assimilable diet and do not overload the stomach. Eat small amounts at frequent intervals; forbid liquids and pastry. A little wine may do good, but you must watch habit. Regulate hygiene. Avoid all excitement or conditions that will cause an attack. In anæmia, give iron and arsenic. The best bitter and stimulant is *tr. nucis vomicæ*. Aloes, gentian, or *asafoetida* for flatulence. Nitromuriatic acid for acidity, fifteen minutes before meals. Aromatic spirits of ammonia, stimulants, and rest in the recumbent position to avoid syncope.

During the attack, elevate the extremities and lower the head, as fainting comes from an anæmia of the brain. Small whiff of ammonia. Cold to the face and chest. Hypodermic injections of alcohol, strychnina, or tonics. Artificial respiration. When due to loss of blood, use transfusion. Follow with tonics.

DISEASES OF THE INTESTINES.

DIARRHŒA.

Diarrhœa is not a disease, but merely a *symptom* of local or constitutional disturbance, manifested by frequent abnormal passages from the bowels. Among the numerous causes might be enumerated: *Psychical* causes, such as fright, fear, or anxiety. *Reflex*, from pregnancy or teething. *Inflammatory*, from ilio-colitis, typhlitis, proctitis, dysentery, cholera morbus, and cholera infantum. It also comes from heat, cold, and medicines. Accompanies such *fevers* as typhoid, typhus, yellow fever, cholera, acute rheumatism, and tuberculosis. It is present in gout, cancer, diabetes, anæmia, uræmia, leucæmia, and many other diseases.

Stools may be watery, slimy, mucous, fatty, serous, bloody, bilious, mixed, feculent, membranous, lenteric, scybalous, diphtheritic, or purulent.

As *treatment*, *symptoms*, and *diagnosis* depend on the cause, see appropriate headings—Ileo-colitis, Cholera Morbus, and Cholera Infantum.

INTESTINAL CATARRH.

Intestinal catarrh is usually limited to one part of the intestinal canal, and rarely involves every portion at one time. The terms *enteritis* and *intestinal catarrh* are entirely too broad in their meaning and liable to confuse, even though public

use has given them place. The terms will only be dealt with in a manner that will limit them to certain portions of the intestine involved.

DUODENAL CATARRH.

Synonyms.—Catarrh of the duodenum; duodenitis.

Definition.—An *acute* or *chronic* inflammation of the mucous membrane of the duodenum, which may extend to the gall-duets and cause jaundice, constipation, severe pain, and symptoms of intestinal indigestion.

Etiology.—Due to cold and errors in diet, such as too much fat; malarial toxæmia, germs, irritants of all kinds, and extension from adjacent structures.

Symptoms.—*Painful digestion.* *Constipation*—no diarrhoea. From the third to seventh day *jaundice* of varying degree appears. *Pain* in the right hypochondrium and at the umbilicus, with soreness and tenderness on deep pressure. Liver is tender, and there may be hepatalgia. Great distress three hours after eating; flatulence and pain, especially marked after taking starches and fats. Breath bad and tongue coated. *Fæces* are white, putty-like, and offensive. *Urine* loaded with urates. Headache, vomiting, rise of temperature and pulse, and poor appetite.

Pathology.—Duodenal mucous membrane is swollen, red, and inflamed. The ductus communis choledochus is occluded by the swollen membrane, or is inflamed itself, thus obstructing flow of bile and causing jaundice. Pale stools mean an absence of bile. *Bile is an antiseptic*, and when absent there is intestinal indigestion with flatulence. Duodenal *ulcers* may be found.

Diagnosis.—*Gastric catarrh* has peculiar pain and nausea soon after eating. Pain in duodenitis is three hours after

eating, and associated with jaundice. *Hepatic colic* is paroxysmal and more severe. *Hepatalgia* begins suddenly, and leaves as soon without sequelæ.

Prognosis.—Good. It lasts two to three weeks. May become chronic.

Treatment.—*Diet.*—Avoid starches, fats, alcohol, and stimulants. Give predigested albumens and skimmed milk, in small quantities. No pulps of meat or any irritant food. Very weak coffee with skimmed milk may be allowed. White of egg or game. *A large injection of cold water*, repeated, will relieve congestive symptoms best. It also cleanses the bowel of faecal matter. Alkalies, phosphate of soda, Rochelle salts, and taraxacum are recommended. Give three to five grains of bismuth subnitrate every hour or two. Place *mustard poultices* or a fly-blister over the painful spots to relieve pain. May resort to belladonna, hyoseyanus, Cannabis Indica, or opium for pain. From the first, give *ox-gall*, gr. iii–v, to keep the intestines aseptic, aid digestion, and supply deficiency of bile. *Malarial toxæmia* indicates quinine, per rectum, gr. xx–xxx, daily. If *ulceration* is suspected, feed per rectum, and administer silver salts, sulphocarbolate of zinc, or other antiseptics.

TYPHLITIS.

Synonyms.—Catarrh or inflammation of the cæcum.

Definition.—An inflammation of the mucous membrane of the cæcum, which may involve the colon and appendix vermiformis (*appendicitis*), accompanied by fever, local tenderness, constipation, and symptoms of peritonitis.

Etiology.—Lodgment of foreign bodies such as seeds, buttons, and faeces. Direct injury, extension, and exposure to cold.

Symptoms.—Uneasiness, *pain, tenderness* on pressure in *right iliac fossa* and along the ascending colon, with some prominence. Legs flexed on abdomen; *obstinate constipation*; dyspnœa; malaise; *high fever*; coated tongue; anorexia; vomiting; great depression; cold, clammy skin; and, at times, all symptoms of peritonitis. A *tumor* that feels like *hard links of sausage*, due to impacted feces, is felt in the right iliac region. Great peristaltic action and *vomiting of fecal matter*. May have a slight diarrhœa from the irritating impaction. *Perforation* is indicated by sudden collapse, high fever, and severe peritonitis.

Diagnosis.—Made from the severe localized pain in the right iliac fossa; peculiar sausage-shaped tumor; high fever and constipation.

Prognosis.—Lasts one week or more, and usually recover.

Treatment.—*Avoid active purgation*. Rest in bed. *Sulphate of magnesium*, gr. xx, with *opium*, to liquefy the stools, and avoid increased peristaltic action resulting from cathartics. If inflammation is not severe, rectal *injections of water as hot as can be borne*, every four hours, act as poultices and remove impactions. Give liquid foods and milk. Relieve abdominal tension by supporting the legs with pillows. *Laparotomy* is often advisable to remove impactions and sloughing tissue. *Vomiting* is hard to control, but a hypodermic of morphina or opium internally will relieve it and pain. *Prevent impaction* by injections; use good hygiene, and recovery usually follows.

PERITYPHLITIS.

Description.—An inflammation of the loose areolar tissue around the cæcum, closely related to typhlitis and due to it or direct injury. May occur in typhoid or typhus fever. The *symptoms* are those of peritonitis and typhlitis. Fever, con-

stipation, and tumor in right iliac region, with tenderness and severe pain. The exudation is absorbed or suppurates. Suppuration is preceded by chills and fever. *Abscess* will open into the bowel, peritoneum, or on the skin. Attacks frequently recur.

Treatment.—In the very start, *treat same as in typhlitis*, with hot poultices, cold compress, or leeches, and small doses of magnesium sulphate, with morphina to relieve pain. Sulphide of calcium, gr. $\frac{1}{10}$, every three hours, will often prevent suppuration. *Surgical treatment* is now recognized as a curative means, and when abscess is found or suspected, operative interference is advisable. *Aspiration* may be done, but laparotomy is most certain. Cleanse abscess cavity with peroxide of hydrogen or pyoctanin (ten percent.), and give tonic treatment. No solid foods. Liquid and nourishing diet.

PROCTITIS.

Synonyms.—Catarrh of the rectum; mild dysentery; “rectitis.”

Definition.—An inflammation of the rectum, recognized by a burning pain, with frequent desire to go to stool, marked tenesmus, and passage of mucus, blood, and scybala.

Etiology.—Most common in women. Due to constipation; frequent rectal injections; hemorrhoids; foreign bodies; pressure of a retroverted uterus or tumor; catching cold or sitting on cold, damp substances; habitual use of aloes; cirrhosis of the liver.

Symptoms.—A *burning, uneasy sensation in the rectum*, with pain on defecation. The discharges consist of mucus mixed with blood or pus and scybalous matter. *Great tenesmus; frequent and constant desire to go to stool*, with passage of small

amounts at a time. Nausea, anxiety, and, in some cases, fever. Colon is usually impacted. Headache, prostration, and extreme muscular soreness. *Bladder* is irritable and there is often retention.

Chronic proctitis presents the same symptoms, not so well marked. Stools are loose, offensive, and soon become purulent. *Ulcers* form and sloughs are passed.

Pathology.—That of inflammation in other parts of the intestine. Large ulcers are formed.

Diagnosis.—Can hardly be mistaken, if symptoms are noted.

Prognosis.—*Mild cases* recover in one week or less. *Severe cases* may become chronic; cause periproctitis, abscess of the liver, or thrombosis of the hemorrhoidal veins.

Treatment.—In mild cases, with little strangury or diarrhoea, give small doses of castor-oil, with a few drops of laudanum.

R

Olei ricini.....	f 3ij.
Tr. opii.....	℥ ij.
Aquæ menthæ pip.	℥ i-iiij.
Sacchari.....	q. s.

M. Signa. Give every three hours.

Careful injections of a pint of hot water or flaxseed-tea relieve greatly. *Nitrate of silver*, gr. xx, to eight ounces of flaxseed-tea, may be used as an injection in severe cases. *Impaction and fever* indicate a mild saline.

R

Magnesii sulphatis.....	gr. xxx.
Acidi sulphurici aromateii.....	℥ x.
Tr. opii camphoratæ	℥ x.
Aquæ menthæ pip.....	f 3j.

M. Signa. Give every three or four hours.

Rest in bed and light diet that will leave no residue. Suppositories containing oxide of silver, pyoctanin, glycozone, or cocaine are recommended. Small doses of calomel and ipecac often give good results. Correct a misplaced uterus; relieve hemorrhoids; and regulate habits. Treat ulcers surgically. The best application is pure nitric acid. *Avoid large doses of opium* in acute proctitis, as they are objectionable.

PERIPROCTITIS.

Description.—An inflammation of the cellular tissue surrounding the rectum, arising from proctitis, direct injury, or tuberculosis. Great pain attends, and an exudation occurs which is absorbed or suppurates, giving rise to a *fistula*. A hard or soft tumor is felt in the perineum. Patient cannot sit down, and has great pain at stools. Stricture of the rectum may result.

Treatment.—Open abscess as soon as found, and treat surgically, observing the modern rules of antiseptis. Give tonic treatment and nourish the patient with appropriate diet.

CHOLERA MORBUS.

Synonyms.—English cholera; cholera nostras; bilious cholera.

Definition.—A severe catarrh of the mucous membrane of the stomach and bowels, coming on suddenly with violent vomiting, diarrhœa, cramps, and great prostration.

Etiology.—A disease principally of spring, summer, and fall. Unwholesome food, catching cold, improper hygiene. Said to be due to germs in milk, water, and food.

Symptoms.—*Sudden in onset*, usually at night. Begins with a *chill*, followed by *severe colic*, *vomiting*, and *purging*. *Diarrhœa*. *Stools* are first formed and soon become like rice-

water; *large, free evacuations*; body shrinks away; voice becomes husky; patient goes into collapse; breath is cold and tongue dry. *Violent cramps* in the muscles of the arms and calves of the legs. Pulse is feeble; great anxiety and thirst. All food is vomited. Muscles may rarely rupture from contraction.

Pathology.—*Blood* is thick and dark, and the serous membranes are dry. *Muscles* are granular. Muscular cramps are due to lessened fluidity of the blood. Gastro-intestinal mucous membrane is inflamed, sometimes ulcerated, and glands enlarged. Cases may occur in which no lesion is found. A *bacillus*, similar to that found in cholera, is claimed to be present.

Diagnosis.—*Arsenical* and other *mineral poisons* simulate cholera morbus and can only be diagnosed by the history or post-mortem. *Asiatic cholera* is epidemic, is more fatal, and presents the cholera bacillus of Koch.

Prognosis.—Rarely fatal in this country. Lasts from a few hours to one day. Dr. Jauhae says that “in cases of healthy persons, in this country, cholera morbus is never fatal.”

Treatment.—The first indication is to *relieve pain and cramps*. A hypodermic of morphinæ sulphas, gr. $\frac{1}{4}$ to $\frac{1}{3}$, with atropinæ sulphas, gr. $\frac{1}{16}$ to $\frac{1}{8}$. Household remedies are ginger, mustard, pepper, volatile oils, spices, brandy, ammonia, or laudanum. (See *Colic*, p. 209.) The Hindus use what they term a *hot treatment*.

Rx

Olei cajupiti.....	f℥j.
Tr. capsici	f℥iv.
Tr. camphoræ	f℥ij.
Chloroformi.....	f℥j.
Ætheris fortioris.....	q. s. ad. f℥ij.

M. Signa. One teaspoonful every half-hour in its purity, until relieved. Do not add or follow with water.

This is a hot dose and brings tears to the eyes, but will always relieve if given from the first. Wrap patient in good hot blankets and apply hot water or mustard over the seat of pain. When due to cold, give hot drinks. Small doses of arsenite of copper, every ten minutes, will relieve cramps. Da Costa recommends inunctions of chloral for muscular cramps.

Vomiting and Diarrhœa.—Nothing will relieve better than small doses of calomel and *pulv. ipecac.* (gr. $\frac{1}{60}$), every two hours. *Cupric arsenite* also controls it. A most reliable and efficient combination for vomiting and purging is:

R

Zinci sulphocarboulatis..... gr. ss-ij.

Lactopepsin..... gr. i-ij.

Bismuthi subnitrat..... gr. i-v.

Misce. Fiat *pulv.* No. 1. *Signa.* Every one or two hours until symptoms are checked. If first dose is vomited, persist every few minutes until one will be retained.

Salol, iodine, salicylic acid, and a host of other antiseptic and antispasmodic remedies are recommended. A large dose of castor-oil or aromatic syrup of rhubarb will often relieve, when the cause is error in diet. Always remember that in diarrhœa *elimination* is the main principle, and all treatment must be preceded by a saline cathartic, calomel or castor-oil, and followed with intestinal antiseptics.

A broad flannel band around the abdomen will often prevent an attack. Rest in bed; care in diet and tonic treatment when the attack has passed. Acid drinks and pellets of ice relieve thirst. (See *Diarrhœa*, p. 223.)

CHOLERA INFANTUM.

Synonyms.—Infantile cholera; infantile summer complaint.

Definition.—An acute catarrh of the mucous membrane of the stomach and intestines of young children, with marked diarrhœa, vomiting, nervous manifestations, and fever.

Etiology.—Teething, improper diet, bad hygiene, heat, and disease germs. Occurs during the first two years of life in summer-time. *Epidemic.* Doubtful if it is contagious.

Symptoms.—The child may be feverish, irritable, and have a slight diarrhœa for weeks before the onset; or the attack may come suddenly with *vomiting, retching, colicky pains, a clear, serous, odorless, or greenish diarrhœa.* Stools are frequent, and number from ten to forty in a day. Body becomes shrunken in a few hours; mouth and eyes are half open, and there is a vacant stare. Red spots on the cheek and soreness along the colon. Respiration is shallow. *Fever,* burning heat in the forehead and epigastrium, and a great desire for drink. *Tongue* is dry and brown, and pupils contracted. *Skin* is cold and clammy, and patient goes into collapse and dies, or slowly recovers. Convulsions often occur.

Pathology.—That of any inflammation, and may involve the stomach, intestines, or both. The *constitutional symptoms* are due to *absorption of ptomaines* from the intestinal canal, where they are produced by germs. Kidneys are congested and the blood is dark and thick.

Diagnosis.—*Ilio-colitis* is gradual in onset, and should not be confounded with the sudden onset of cholera infantum.

Prognosis.—If taken at once, it is good; later, it is more fatal. *It kills more children than any other disease.*

Treatment.—*Preventive.*—See to hygienic surroundings. Keep the child cool, and allow cold drinks in moderation.

Dress loosely, always with wool next the skin. Give plenty of fresh air, and keep it cool during the heat of the day. *Sterilized milk* must be insisted upon in artificially fed children. Dr. Hirst recommends the following formula, which he has modified from other formulæ: "For a two-ounce bottle, take of cream five ounces and milk two and one-half ounces; put in a skillet, and digest with two and one-half grains of pancreatin and sodium bicarbonate, five grains. Put in each bottle six drams of the mixture, and add ten drams of sugar solution (one ounce to the pint)." Another formula, that is like mother's milk, is:

Rx		
	Cream	f 3iv.
	Cow's milk	f 3ij.
	Milk-sugar	gr. l.
	Water	f 3j.
	Thoroughly sterilize, then add	
	Lime-water	f 3ij. M

When *diarrhœa* is simple, give small doses of calomel or syr. rhei aromaticus, with a few grains of sodium bicarbonate or potassium carbonate, every two or three hours. If this fails, give the sulphocarbolate of zinc, with bismuth and pepsin (see p. 221), as it destroys germs, stops vomiting and pain, and relieves fever by its antiseptic and antispasmodic action. A favorite formula after elimination has been complete is:

Rx		
	Bismuthi subnitratis.....	3j.
	Glycerol acidi carbolici.....	℥ xvj.
	Tr. cardamomi comp.	
	Spts. chloroformi.....aa.	f 3iv.
	Aquæ menthæ pip.	q. s. ad. f 3ij.

M. Signa. One-half to one teaspoonful in water every two or three hours. Shake before taking. (B. Reed.)

If *diarrhœa* still proves obstinate, use a free rectal injection of sulphocarbolate of zinc, gr. x to f ̄ij of warm water, as the poisons are active in the lower bowel and cannot be reached by the mouth. When the child is comatose, hard to arouse, feverish, and threatened with convulsions, place its whole body in a tepid-water bath (98° to 101° F.), and apply cold to the head and mustard to the back of its neck. This will arouse it and afford opportunity to give medicines. After a bath of this kind, wrap the child in hot blankets and keep the head cool. Stimulate with hot coffee or brandy if necessary. (For other treatment of diarrhœa, see p. 221.) Diet should be the mildest. Give whites of eggs, in water, with pepsin; rice-water, to which may be added artificial foods. In this condition opium must be used with great caution, for its use usually means death in the severe forms. The cardinal points in treatment are *elimination*, *diet*, and *intestinal antiseptics*.

ILEO-COLITIS.

Synonyms.—"Summer diarrhœa"; inflammatory diarrhœa; improperly called catarrhal enteritis.

Definition.—A catarrhal inflammation, *acute* or *chronic*, limited to the lower part of the ileum and portion of the colon, with diarrhœa, vomiting, pain, slight febrile reaction, and rapid depression.

Etiology.—Heat, cold, bad milk, and improper diet; bad hygiene and over-crowding. A disease principally of city, hand-fed babies under two years of age.

Symptoms.—*Acute.*—Discomfort about the belly, with diarrhœa. There is *purging* of a sour, acid, curdy-like material, at times mixed with blood. Later, it is watery or greenish, and smells very bad. *Vomiting* of acid, curdy masses. There are from ten to twenty stools daily. Depression, weakness,

red tongue, skin dry, urine scanty, pulse feeble, and *temperature* may reach 104° F. Dysenteric symptoms may supervene. *Gripping pains*. *Nephritis* is a complication. Child may become comatose, pupils are sluggish, skin dark, involuntary stools, convulsions, and death. Spurious hydrocephalus, from thrombosis, may occur. Prolapse of the rectum comes from straining at stool.

Chronic.—Follows the acute. *Stools* are not so frequent, but are offensive, thin, and contain mucus, pus, or serum. *Skin* is pale and flabby. *Indigestion* and *vomiting*. Acute attacks occur. It may last for months. Little or no pain. *Ulceration* is indicated by hemorrhage or dark clots. Flatulence, rapid exhaustion, and finally death or recovery.

Pathology.—*Acute*.—Mucous membrane of the ileum and colon is thickened, red, inflamed, and coated with mucus and epithelial cells. Peyer's glands are swollen. Mesenteric and intestinal glands are swollen and dark.

Chronic.—Membrane is dark red or gray, with enlarged follicles. A false membrane sometimes exists. Small, dark patches are seen, and ulcers at the seat of the follicles. Kidney is involved. Invagination often occurs.

Diagnosis.—Easily made from *typhoid fever* and *tuberculous ulceration* of the bowels.

Prognosis.—Not very good, in large cities; but where proper precautions can be taken and treatment carried out, it is favorable.

Treatment.—*Absolute rest* in a cool room *during the heat of the day*. Good, fresh, pure air of the country, mountains, or sea-shore. *Clothe with flannel*. *Diet* must be regulated, and nothing but mother's milk, or, if hand-fed, nothing but whey, with a small amount of prepared food, can be given. Sterilized milk may be given. (See p. 223.) Koumyss is often of advantage as a food. *Fever* and *stupor* require tepid baths—not

antipyretics, as they are too depressing. If the case is seen early, give calomel in one-tenth-grain doses, castor-oil or rheum, with soda, to cleanse the bowel. Follow this with sulphocarbolate of zinc, bismuth, and pepsin. Diarrhœa is treated as indicated on pages 221 and 223. Bichloride of mercury and salicylate of bismuth have their advocates. Stimulate as much and as often as is necessary. One one-hundredth grain doses of triturated calomel and ipecac, every one or two hours, are excellent.

In the *chronic* form, regulate diet; give astringents, and tonics of quinine, iron, and cod-liver oil. When the lower bowel becomes involved, use injections of the silver salts. Oxide of silver, gr. $\frac{1}{8}$ to $\frac{1}{4}$, in pill form for ulceration.

ACUTE DYSENTERY.

Synonyms.—Bloody flux; ulcerative colitis; colitis.

Definition.—An *acute, sporadic, endemic or epidemic, infectious* inflammation of the mucous membrane of the colon, with tenesmus, frequent desire to go to stool, and passage of scybulous masses, mucus, blood, and serum.

Etiology.—Foul air, impure water, bad drainage and food, atmospheric changes from heat to cold. *Epidemic* in armies, prisons, and cities. *Endemic* in the tropics. It is *not contagious*, but *is infectious*. The *varieties* are acute catarrhal, ulcerative, croupous, diphtheritic or gangrenous dysentery. Primary cause is a germ whose identity is unknown.

Symptoms.—Sometimes there is a protracted diarrhœa which precedes the onset. *Onset with a chill*, followed by slight fever. Tenderness along the colon on pressure. Rumbling of the bowels, and colicky pains (*tormina*) at the umbilicus. *A burning, weighty feeling at the anus, and constant desire to go to stool*, not relieved by defecation and violent straining (*tenes-*

mus). *Stools* are small in amount and mixed with blood, mucus, or pus, and are highly offensive, with here and there a small faecal mass. *Vomiting* is not a constant symptom. When the inflammation subsides, large faecal masses are passed, showing a condition of constipation.

At times the stools are dark, slimy, and putrid, with pieces of sloughed mucous membrane, giving rise to the term *diphtheritic or gangrenous dysentery*. Vomiting, hiccup, and great depression; tenesmus, cold skin, and weak heart. *Gangrenous dysentery* is most common in armies, and is attended with great prostration.

Pathology.—*Catarrhal Dysentery*.—Mucous membrane of the colon is swollen, infiltrated, covered with muco-pus; enlarged glands, softened patches, or even desquamated epithelium, leaving small ulcers or cicatrices. Probably due to a germ.

Diphtheritic Dysentery.—Ulcers with thick, irregular base, more or less gangrenous, with a mucous or false membranous coating like that of diphtheria, forming a cast of the bowel. Large cicatrices may remain, causing intestinal obstruction.

Gangrenous dysentery is an aggravated form, with extensive destruction of tissue, involving one or all three coats and causing perforation.

Diagnosis.—*Inflammation of the small intestine* is accompanied with profuse diarrhœa, without tenesmus and rectal irritation. *Proctitis* is not so acute; stools are not so offensive; and is shorter in duration. *Typhoid fever* has peculiar temperature, eruption, and other symptoms.

Prognosis.—Recovery takes place in one or two weeks, in mild cases. May result in stricture of the bowel, chronic form, perforation with peritonitis, abscess, or death.

Treatment.—*Preventive*.—During epidemics, provide the best drainage, food, and hygiene. Drink only *boiled water*

and thoroughly cooked foods. Eat *no fruits*. Wear *flannel round the abdomen*, and avoid exposure to heat. Keep bowels regular, and *disinfect stools* of patients. During the attack, give only such nourishing food as will digest in the stomach and leave no residue. If seen early and the stools contain scybala, give castor-oil, $\text{f } \frac{\text{z}}{\text{ss}}$ ss-j, with tr. opii, gtt. v-x, once daily, to clear the bowels of fæces. Cleanse the bowel with one pint of hot water, and inject silver nitrate, ʒ ss-j , with hot water, Oj, once or twice daily.

Internally, give pulvis ipecac rad., gr. xxx-xl, in the smallest quantity of hot water possible, and make the patient lie quietly in bed to prevent vomiting. Repeat at once if vomited, and persist until it is retained. Put a hot flaxseed poultice over the abdomen. Every two hours give sulphocarbolate of zinc, gr. iv-v. Salol, gr. iiij, may be given. *Aconite*, in small doses, is a general treatment in India. A combination of tr. Cannabis Indica and tr. hyoscyamus is recommended. Naphthalin, gr. i-v, every two hours, with castor-oil and opium. Bismuth, Fowler's solution, and silver salts all do good. When these forms of treatment fail, give full doses of opium—these are dangerous, but often curative. Frequently cleanse the bowel by hot or cold injections. Give *tonics* during the whole disease. In gangrenous or diphtheritic dysentery, use antiseptic injections or diluted peroxide of hydrogen, with tonic treatment and turpentine internally. Suppositories of opium and oxide of silver are often beneficial.

CHRONIC DYSENTERY.

Description.—Usually comes from the acute. The *stools* number from two to twenty daily, are offensive, and contain mucus, pus or blood, and scybalous masses. Stools vary from day to day. *Appetite* is capricious, tongue red and

glazed, and patient emaciates. *Abscess of the liver* is common. *Death* may be due to pneumonia, phthisis, Bright's disease, lardaceous disease of viscera, faecal abscess, or peritonitis. The disease is very intractable. There is a hectic fever; abdomen is sunken and tender; *tenesmus* and general debility. Post-mortem shows a thickened, ulcerated or cicatrized mucous membrane. If recovery ensues, the bowels are always very susceptible to changes or relapses.

Treatment.—Change of climate, best hygiene, and woolen underclothing. Milk and foods that digest in the stomach without residue remaining. Pulv. ipecac, gr. ij, in pill form, ter die, often checks symptoms. Astringents and antiseptics. Sulphocarbolate of zinc, salol, arsenite of copper, and other salts have their advocates. Monsel's solution, ℥ v; the sulphate or nitrate of iron. Rectal injections of nitrate of silver. Opium, bismuth salicylate, and silver oxide, combined, as a suppository, are good. Terebene or turpentine with opium. Counter-irritation.

ULCERS OF THE INTESTINE.

Ulceration may occur in any part of the intestine, and is simply a *condition* and *not a disease* of itself. It is *symptomatic* of such conditions as typhoid fever, tuberculosis, cancer, dysentery, ilio-colitis, and other inflammatory conditions. It is most common in the ilium, and its main symptom is obstinate diarrhœa. (For treatment and particulars, see *Causative Diseases*.)

CANCER OF THE INTESTINE.

Cancer of the intestine is rare, and occurs after forty years of age. *Scirrhus* is most common, then the *colloid*. There is a dull, heavy, steady, or sharp periodical pain, with a tend-

ency to diarrhoea. Salivation, anæmia, cachexia, and emaciation. *Death* is the ultimate result. *Treatment* is *palliative*, and consists of opium and injections of hot water with astringents.

INTESTINAL OBSTRUCTION.

Definition.—Obstruction of the bowels is an occlusion, partial or complete, of any portion of the intestinal canal, which retards or prevents the normal passage of faecal matter.

Etiology.—Constipation; stricture; congenital or acquired; strangulated hernia; compression from tumors; torsion; impaction of foreign bodies such as gall-stones; intussusception; and peritoneal adhesions.

Symptoms.—*Acute.*—*Intense abdominal pain* at the umbilicus, *coming on suddenly*, continuing, and *increased by pressure*. *Vomiting* of food, then bile, and finally faecal matter if the obstruction is low down. Vomiting is persistent, and no food can be taken. *Abdomen* is tense, swollen, and tympanitic; great rumbling of the intestines. *Constipation* is marked, and is not relieved by ordinary methods. If obstruction is high up, faeces may pass from the lower bowel.

Intussusception causes a bloody, mucous passage, and, at times, a portion of sloughed gut may be ejected. *Tumor* in the region of invagination. Breath is bad, eyes sunken, and collapse comes early. Temperature falls; pulse is weak; great thirst; tongue dry; peritonitis; and death in three to seven days.

Chronic obstruction is due to cancers, constipation, adhesions, tumors, and inflammatory processes. Constipation is irregular, and can be overcome at first. Vomiting takes place at intervals, but is not faecal. Abdomen is distended, and some pain is present. Gradually the symptoms become more

severe; constipation is marked; faecal vomiting; pain is severe; and a regular acute attack follows.

Pathology.—*Intussusception* (invagination) is a slipping of one part of the gut into another, like the finger of a glove. The most common form is the *ilio-caecal*, then the *ilio-colic*. Inflammation ensues, adhesions form, the invaginated part of the gut sloughs away, and there is resolution or death. Pathology of other affections is the same as the cause.

Diagnosis.—*Adhesions* have a history of previous peritonitis. *Constipation* has its history of slow onset. *Impacted gall-stones* follow hepatic colic. *Hernia* is readily diagnosed. *Intussusception* is of sudden onset, in male children mostly, with vomiting, spasmodic pain, bloody stools, tumor, and passage of sloughed gut. *Faecal vomiting* indicates an obstruction low down. In general, *pain* is due to colic and peritonitis.

Prognosis.—Depends on the form, but is usually bad.

Treatment.—*Never administer purgatives. Give opium* to quiet pain and peristaltic action. In the *acute form*, *hernia* must be reduced by manipulation or surgical measures. *Intussusception*, in its first stages, may be relieved by gentle manipulation; inflation of the intestines by injections of gas; or distention with a water enema, as large as can be given. Failing in this, *laparotomy* must be done. Adhesions, impacted gall-stones, and cancers require laparotomy and resection of the gut. *Constipation* (see page 233). If food cannot be retained, give alimentation per rectum. Stimulate and support. *Intestinal antiseptics* sometimes overcomes tympany. *Aspiration* is also used to relieve tympany.

INTESTINAL HEMORRHAGE.

Description.—*Hemorrhage* is merely a *symptom* of a diseased condition, and may come from any part of the intestinal canal.

Its principal causes are ulcers of typhoid, dysentery, and other conditions. Cancer, hemorrhoids, enlarged uterus, obstruction of the lungs or heart, cirrhosis, scurvy, and purpura all give rise to it. Hemorrhage may be arterial, venous, or capillary. Blood from the small intestines is black, tarry, and mixed with feces. From the lower bowel, it precedes or follows a stool, and is not blackened or mixed with feces. It may be in a stream, clots, drops, or merely streaks. *Treatment* is considered in connection with the causative troubles.

ENTERALGIA.

Synonyms.—Intestinal colic; tormina; “cramp colic”; intestinal neuralgia.

Definition.—An acute, paroxysmal pain in the region of the umbilicus, slightly relieved by pressure, due to an irritation of the sensory nerves, with spasmodic contraction of the intestinal muscle, and not accompanied by fever.

Etiology.—Improper diet, such as crabs, unripe fruit, spoiled meats and fish; great changes of heat or cold; neuralgia, hysteria, hypochondriasis, intestinal indigestion; copper or lead poisoning; malarial or specific infection.

Symptoms.—Patient is found in great agony, with the limbs drawn up, pressing his abdomen; features pinched; skin cold; a cold perspiration; and a *grinding, twisting, cutting pain* in the umbilical region. Nausea, vomiting, and a desire to go to stool. Great anxiety. *Pain* may last for a few hours or a day, and leaves the abdomen tender and sore. *No fever.* Abdomen is tense and often retracted; tympany and borborygmus. The *paroxysm* may come on suddenly or slowly. *Lead colic* comes on in connection with a history of lead-poisoning.

Diagnosis.—*Hepatic, renal, uterine, and ovarian colic* have

their peculiar localized symptoms. *Inflammatory troubles* have fever, while ordinary colic has not. *Gastralgia* is localized to the stomach and is relieved by vomiting.

Treatment.—For the *paroxysm*: A hypodermic of morphinæ sulphas, gr. $\frac{1}{4}$ to $\frac{1}{2}$, and atropinæ sulphas, gr. $\frac{1}{120}$, is most certain. May give morphina, gr. $\frac{1}{4}$ to $\frac{1}{2}$, in a spoonful of hot water, for speedy relief. Chlorodyne, chloranodyne, or Hoffman's anodyne. Volatile oils, brandy, chloroform or ether, or arsenite of copper all serve a good purpose to relieve pain. Applications of mustard, hot poultices, or dry heat over the abdomen are useful. The next indication is to *eliminate*. Give a large dose of castor-oil or aromatic syrup of rhubarb. The best combination is:

R

Hydrargyri chloridi mitis..... gr. iij.

Sodii bicarbonatis 3j.

Sacchari lactis..... 3j.

M. Fiat pulv. No. 10. Signa. One every hour.

If they do not act freely when five are taken, give a half-bottle of liquid citrate of magnesia. Follow with light diet and tonics.

Lead colic demands morphina, magnesium sulphate, and potassium iodide. (For other treatment of colic, see *Cramp*, p. 220.)

CONSTIPATION.

Synonym.—Costiveness.

Definition.—A term used to denote a deficiency or absence of the normal passage from the bowels.

Etiology.—Indigestion, torpid liver, articles of diet, lack of proper tone, and innervation of the intestinal muscle, causing lessened peristaltic action. Habit is a common cause from neglect. Symptomatic of lead-poisoning, obstruction, malaria,

diseases of the liver, stomach, and bowels. Most common in women.

Symptoms.—Bowels are never moved except cathartics are taken, and then only once in every three days or a week. *Normally*, a person should have at least one large free passage every day. Besides these symptoms they complain of *head-ache*, giddiness, sluggish mental activity, lack of appetite, digestive disturbances, and sallow complexion. Palpitation of the heart, cold extremities, and great straining on defecation. Stools are hard and lumpy.

Treatment.—*Seek for the cause* and remove it. If due to *retroverted uterus*, replace it. *Impaction of the colon* requires hot-water injections and mechanical means. Correct diet and habits, and *insist on a regular hour in which to go to stool every day*. Instruct patients to *hold the gases in the bowel* and not to pass them off every time they desire it, as they keep the bowels distended and aid in the passage of faecal matter. A glass of ice-cold or hot water, with a little salt in it, before breakfast, answers in mild cases. *Massage* or kneading the abdomen, and exercise, constitute valuable means of relief. *Mild galvanism* or *faradism*, applied along the course of the colon or by a negative rectal electrode, will cause passages in the most obstinate and chronic cases. *Cascara sagrada* and other drugs answer nicely. Calomel in large doses, gr. v-x, or in small doses, gr. $\frac{1}{10}$ to $\frac{1}{8}$, in tablet triturates, every two hours.

When the *stools are dry*, give small doses of magnesium sulphate, or

Rx

Ext. nucis vomicæ..... gr. 1/4.

Ext. hydrastis gr. j.

Pulv. rhei gr. j.

Misce. Fiat pil. No. 1. Signa. One night and morning.

In old chronic cases, the best results come from :

R̄

Ext. aloini purif.....	gr. x.
Ext. nucis vomicæ.....	gr. x.
Ext. belladonnæ	gr. iv.
Oleoresinæ capsici.....	gr. ij.

Misce. Fiat pil. No. 20. Signa. One pill thrice daily. As soon as two passages occur in one day, order one-half pill and so diminish until the habit of constipation is broken up. (Waugh.)

Other conditions have their appropriate forms of treatment and are considered with the causative trouble.

INTESTINAL WORMS.

Varieties.—*Tania solium*; *Bothriocephalus latus*; *Tania saginata*; *Tania mediocanellata*—all varieties of the tapeworm. *Ascaris lumbracoides*, or round-worm. *Oxyuris vermicularis*, or seat-worm. *Trichocephalus dispar*. *Ancylostomum duodenale*.

Etiology.—Worms are developed from the ingestion of their eggs into the alimentary canal with food, drink, or air. People who have pet dogs and cats in the house are most exposed, as these animals are commonly affected and drop the eggs of the worm.

General Symptoms.—Some cases present no symptoms. Others have disordered digestion and pain in the umbilical region. Itching at the anus and nose, hence scratching and picking. Thirst, ravenous appetite, emaciation, palpitation of the heart, sympathetic cough, disordered senses, convulsions, fever, and vertigo in some cases; insomnia; passage of the worms or part of them or their ova. Three prominent classes are met, and these only will be considered.

TÆNIA SOLIUM.

Description.—The common *tapeworm* is developed in the small intestines from ova ingested with pork or raw beef. There is usually one, but there may be many. It measures from twenty to forty feet in length. The tapeworm is made up of joints that become detached and are passed with stools or drop away spontaneously. Average life of worm is ten years. The head is buried deeply in the mucous membrane and holds on by two or four hooks or suckers. Each joint is capable of reproduction, and contains the male and female organs. Patient has colicky pains, choreic movements, hysteria, insomnia, intestinal catarrh, and passes segments of the worm—the only reliable point of diagnosis.

Treatment.—Give light liquid diet for three or four days, and follow with a good cathartic of Epsom salts, one dram in a glass of water, to remove mucus from the imbedded head. Repeat this for several days; follow with ethereal oil of male fern, ʒ ss–j, and extract of tansy, ʒ ij. Two or three hours after taking this dose give castor-oil, ʒ iss, and let the bowels be opened over a bucket of hot water, so that the worm will not break when passed. Examine to see if the head has come away. An equally efficient and less dangerous remedy is *pumpkin-seed*, ʒ ii–iv. The seed must be administered with the greenish skin that covers it, for in it is the active principle. *Pelletierine*, or decoction of pomegranate, is recommended.

ASCARIS LUMBRACOIDES.

Description.—The *round-worm* measures from three to eight inches in length; resembles an ordinary earth-worm in appearance, although anatomically different; inhabits the small in-

testines; lives about one year. The female is the larger. Ova are taken in with food and drink. Most common in females, vegetarians, and debilitated persons. Catarrh of the bowels favors its development. Worms may crawl into the stomach, throat, Eustachian tube, mouth, nares, or gall-duct. Blueness of the lower eyelids; picking at the nose; uneasiness and intestinal catarrh; gritting the teeth and starting up from sleep (night terrors); colicky pains or diarrhœa; or there may be no symptoms at all. Passing of worms or their ova constitutes the main and only reliable point of diagnosis.

Treatment.—Precede all treatment with light diet and cathartics. *Cowage down*, or the spears on the pod of *Mucuna pruriens*, is the best remedy. Prepare by dipping the pods in molasses; scrape with a knife, and give two teaspoonfuls of the scraped product every morning, for three mornings; follow with a brisk cathartic. These little spears will pierce the worms, kill them, and not produce an undue amount of irritation to the bowels. *Santonin*, gr. $\frac{1}{2}$ —ij, with calomel, gr. $\frac{1}{2}$ —ij, at bedtime, will bring away some of the worms. *Chenopodium ambrosioides*—American wormseed—with calomel, acts nicely. Spigelia or turpentine with mucilage will often answer. *Treat catarrhal conditions* of the bowels, anæmia, and specific troubles; build up the patient, and as the child strengthens the worms abort.

OXYURIS VERMICULARIS.

Description.—*Thread* or *seat worms* measure from two to five lines in length; female is the larger. They are pearly-white, slender, and very active; inhabit the rectum and vagina. Intense itching at the anus, with burning sensation and symptoms of proctitis. Worms are found at the anus;

may enter vagina and cause vaginitis. Child is nervous, subject to convulsions, and liable to practice masturbation.

Treatment.—Regulate diet and hygiene. Give a purge of calomel with aloes and santonin. *Injections* of saturated lime-water to which tr. ferri chloridi has been added, ℥ ii—Oss; carbolic acid and warm water; turpentine or petroleum with hot water and soap; ice-water and quassia. It is well to precede injections by a free purge with Rochelle salts. Glycerin with carbolic acid (one percent.) may answer. Wash anus and genitals with carbolic or bichloride solution, and use a dusting-powder to prevent external irritation.

DISEASES OF THE PERITONEUM.

PERITONITIS.

Definition.—An inflammation of the peritoneum, acute or chronic, local or general, with a fibroplastic exudation, accompanied by severe pain, fever, tympanites, vomiting, and marked depression.

Etiology.—*Acute Peritonitis.*—Direct injury; hernia; perforation of the intestines from ulcers or abscesses; extension from other organs; pyæmia: septicæmia; erysipelas; puerperal infection; great heat or cold. May be idiopathic.

Chronic Peritonitis comes from tuberculosis; Bright's disease of the kidneys; cancer; cirrhotic diseases of the liver; and from the acute.

Symptoms.—*Acute.*—*Idiopathic* cases commence with a chill, intense fever, pain, and tenderness. Other cases come on slowly with sharp pain, gradual rise of temperature, and local tenderness. *Abdomen* becomes so tender that the slightest touch causes great pain. Patient lies on his back, with thighs flexed on abdomen to relax the abdominal muscles. Cough suppressed on account of great pain; deep breathing impossible; abdomen swollen and tympanitic, causing compression of the lower lobes of lung, with dyspnoea and even cyanosis; bowels constipated; vomiting of food, serum, and bile; temperature 105° to 106° F.; mind very clear. When exudation appears, pain is not so severe. Hiccup may supervene, with delirium, fall of temperature, and death.

Chronic peritonitis has some fever of hectic type; local tenderness, with a feeling of oppression and weight; constipation, alternating with diarrhœa; irregular appetite; vomiting at times. May be constitutional symptoms of tuberculosis. Peritoneal cavity is filled with fluid, giving fluctuation and distention; or there is little fluid, with a flat, resistant abdomen and hard, irregular surfaces here and there. Rapid emaciation; dullness on percussion, general or local.

Pathology.—*Acute Peritonitis.*—Peritoneum is reddened from hyperæmia and covered with a fibrinous exudation that causes adhesion of the parts. Exudation may fill the peritoneal cavity and amount to several gallons; if absorbed, adhesions remain.

Chronic Peritonitis.—Peritoneum is thick and matted together; liver, spleen, and intestines are adherent; effusion is serous; may contain pus, and is either localized in cavities or general. In tubercular peritonitis, peritoneum is thickly studded with tubercles.

Diagnosis.—*Colic* and *hysterical pains* are slightly relieved or not increased by deep pressure; no rise in temperature. *Intestinal obstruction* is easily diagnosed after a few days. *Toxic gastritis* has the history; constant vomiting and tenderness, limited to stomach. *Inflammatory troubles* of the intestines commonly have pronounced diarrhœa.

Prognosis.—Usually fatal, when due to *perforation*. *Acute* cases favorable; *chronic* cases are usually hopeless, but some are recorded as cured.

Treatment.—*Acute.*—*Avoid active purgation in all cases.* *Idiopathic* cases are relieved by *constant applications of ice-water*, applied to the abdomen every minute, with soft cloths, until temperature falls. This answers better than antipyretics. *Magnesium sulphate*, ̄ ss–j, with tr. belladonnæ, every four hours, in plenty of water, to deplete the intestinal mucous

membrane and blood-vessels, without causing peristaltic action. *Opium* should be *withheld* until it is found absolutely necessary to relieve pain; then it must be *pushed to the point of tolerance*. Hot poultices, in localized peritonitis, as well as warm compresses and counter-irritation. Blood-letting is not required. Tympany is relieved by aspirator, rectal tube, or intestinal antiseptics. In *perforation*, insist on absolute quiet and rest; surgical operation if patient's condition will permit. As most cases of perforation are fatal, all we can do is to give opium to relieve pain and resort to surgical means. *Vomiting* is relieved by ice internally. Give blandest diet.

During *convalescence*, potassium iodide and mercury, with iron, cod-liver oil, and the phosphates; counter-irritation over abdomen. Stimulate freely when necessary. If local effusion of serum impedes respiration, draw off a small portion of it at a time.

Chronic peritonitis requires flying blisters over abdomen. Diuretics, diaphoretics, and evacuants often cause effusion to absorb. *Laparotomy* is practiced successfully for its relief, especially in the tubercular form. Build up patient with iron, quinine, and cod-liver oil. Best foods.

Cancerous or malignant peritonitis is always fatal, and treatment is only palliative.

ASCITES.

Synonyms.—Abdominal dropsy; peritoneal dropsy.

Definition.—An effusion of fluid into the peritoneal cavity, dependent upon some diseased condition.

Etiology.—Chronic peritonitis; portal obstruction; diseases of the heart, lungs, liver, or kidneys; any obstruction to the circulation.

Symptoms.—*Local signs* are enlargement of the abdomen; dullness on percussion, that changes with the posture of patient; distinct succussion wave, indicating presence of fluid. Intestines always float to the surface of the fluid. Percussion gives a tympanitic note at the umbilicus, with dullness in the flanks, when patient lies on his back. When standing, tympany is at the epigastrium and dullness below. Liver, spleen, and stomach may be displaced; pressure on lower lobes of the lungs causes dyspnoea. Digestion impaired; bowels constipated; symptoms of causative trouble.

Pathology.—*Peritoneum* is thickened, opaque, and presents a macerated or water-logged appearance. Fluid is albuminous; rich in salts; high specific gravity; varies in color from a pale amber to a red; may amount to several gallons in quantity.

Diagnosis.—In *ovarian cyst*, dullness is in the median line and tympany in the flanks; center of abdomen is prominent, in place of a uniform enlargement. *Chronic peritonitis* has pain and tenderness, with a tuberculous or cancerous history. *Pregnancy* and *distended bladder* present their peculiar characteristic symptoms, and should never be mistaken.

Prognosis.—Depends on cause. Usually bad, as regards cure. Patients die of the primary disease.

Treatment.—Strike directly at the cause and treat diseases of the heart, lungs, kidneys, liver, or other organs. Reduce effusion by hygienic, medicinal, and surgical means; dry diet, and limit amount of liquids; guard against taking cold; good, nourishing food. *Medicines* consist of diuretics, diaphoretics, purgatives, and alteratives. Elaterium, jalap, jaborandi, and Dover's powder all have their place in treatment, but depress the patient.

When these means fail, resort to surgical measures. Draw off part of the fluid at a time with an aspirator or trochar.

It is not well to remove all the fluid at one time, for it drains too much albumin from the blood by refilling again. *Chronic peritonitis* is sometimes cured by removing all fluid at one time. Dry diet, iron, quinine, cod-liver oil, and treatment of the causative disease constitute the points in treatment.

DISEASES OF THE PANCREAS.

PANCREATITIS.

Description.—Inflammation of the pancreas is acute or chronic, and is never positively diagnosed in life. Prominent symptoms are pain and oppression in the epigastric region; retching, and vomiting of bilious matter; severe salivation; colicky pains; pulse full, tense, and irregular; stools contain fat and a material that resembles saliva; jaundice may be present from occlusion of the bile-duct. *Pain* is not altered by food, but increased by erect posture; sugar often present in the urine. *Terminates* in collapse in four or five days; or, in the chronic form, with formation of abscesses or cysts that may ulcerate into the peritoneum.

Treatment.—Little can be done except to palliate. Rest in bed; light diet without any fat; morphina for pain; counter-irritation and hot fomentations. In the later stages, potassium iodide and mercury; quinine, iron, and supporting treatment. Alkaline salts are recommended. Treat symptoms.

CANCER OF THE PANCREAS.

Description.—Cancer of the pancreas is primary or secondary; scirrhus or medullary. The head of the gland is the most frequent seat. *Pain* is the main symptom. Cachexia; emaciation; loss of appetite; vomiting; jaundice, at times; tumor in the epigastrium, in some cases. Stools are fatty.

Treatment is palliative; cases rarely last more than six months or a year.

DISEASES OF THE LIVER AND APPENDAGES.

INTRODUCTION.

THE liver varies in weight under conditions of age, sex, functional activity, disease, and health. Its main function is the excretion and secretion of bile. Average weight in an adult is about one fortieth of the body weight; in children from one twentieth to one thirteenth. It is about twelve inches long, six inches broad, and three inches thick at its greatest thickness.

Percussion dullness, in health, limits it between the fifth interspace, the lower border of the ribs, and to the right of the median line. Deep inspiration causes the liver to descend nearly one inch. Position varies in males and females, owing to the pernicious habit of lacing and corsets in the latter.

Palpation reveals whether it is smooth, roughened, or nodulated; whether the border is sharp or rounded; whether it is hard or soft, large or small.

Pain is generally dull, and radiates to the thorax, scapula, shoulder, and umbilicus; is *constant*, and *increased* by deep pressure.

Digestive troubles accompany hepatic affections, and vary from slight indigestion to violent gastro-intestinal catarrh.

Disturbed circulation is common, and gives rise to dropsy, hemorrhoids, jaundice, hemorrhage from the stomach or intestines, inflammatory changes in peritoneum, enlargement of the spleen, and superficial abdominal veins.

Jaundice of all grades—not always present in liver-diseases.

JAUNDICE.

Synonym.—*Icterus*.

Definition.—Jaundice is a *symptom* of some hepatic disorder, manifested by a peculiar yellowness of the skin, conjunctiva, and mucous membranes; the presence of biliary matter in the urine and secretions; itching of the skin; and white, offensive, putty-like stools.

Varieties.—Catarrhal jaundice; *icterus neonatorum*; hepato-genous jaundice; hæmatogenous jaundice.

Etiology.—Obstruction, partial or complete, of the bile-duct or any of its radicles in the liver, by gall-stones, hydatids, distomata, stricture, cancer, or tumors; portal obstruction; cirrhosis; atrophy; poisons, such as phosphorus, arsenic, mercury, or antimony; concussion of the brain and nervous causes; hyperæmia and the specific fevers.

Symptoms.—Conjunctiva, skin, and mucous membranes are discolored, yellow, and vary in color from a pale-yellow to a dark-brown or greenish tint. *Urine* contains bile pigment, and gives the characteristic play of colors with nitric acid. Bile is detected in the saliva and other secretions. *Fæces* are putty-like or whitish, and are highly offensive; *pulse* slow; general malaise; debility and stupor; *temperature* subnormal. *Itching of the skin* is a prominent symptom: bitter taste in mouth; loss of appetite. A sudden blackening of the stools means a free discharge of bile. In addition, there are the symptoms of the causative trouble.

Pathology.—*Hepatogenous jaundice* is due to an obstruction to the normal outflow of bile. Bile is taken up by the circulation, produces an excitement of the nervous centers first, and soon causes drowsiness, stupor, coma, and death. Pathology of the causative affection.

Hæmatogenous jaundice is not positively explained, but is

supposed to be due to a failure of the liver to perform its proper function in the formation and elimination of the bile. Others claim that the blood is the tissue at fault.

Icterus neonatorum, or jaundice in the new-born, cannot be explained with our present knowledge on the subject.

Diagnosis.—Easily made from the symptoms.

Prognosis and Treatment depend on the cause. (See *Catarrh of Bile-ducts*, and other diseases of liver.)

HEPATIC HYPERÆMIA.

Synonyms.—Hepatic congestion; biliousness; congestion of the liver.

Definition.—An acute or chronic congestion of the liver, *symptomatic* of a constitutional or local disorder, accompanied by impaired digestion and biliary function. It is either active, when due to arterial trouble, or passive, when due to venous.

Etiology.—*Active hyperæmia* is due to over-eating; alcohol; spices and condiments; fevers; malaria; arrested menstruation; heat and cold.

Passive hyperæmia arises from obstructive diseases of the heart, lungs, kidneys, or pleura; compression of the vena cava by tumors.

Symptoms.—*Active Hyperæmia.*—Pain and feeling of weight in hepatic region; liver *dullness increased*; *tenderness* to pressure; sense of a band around the abdomen; uneasiness; constipation; vomiting at times; marked *indigestion*; *headache*; slight fever; anorexia; and bad taste in the mouth. Conjunctiva has a yellow tinge and indications of slight jaundice.

Passive hyperæmia is slow in onset; liver dullness increased; marked symptoms of indigestion; slight jaundice; and symp-

toms of causative trouble. Hemorrhoids and ascites are common.

Pathology.—*Hyperamia* is but the *first stage of cirrhosis*. A section of the liver appears like a section of nutmeg, hence the term "*nutmeg liver*." Liver increases in size, and finally contracts or atrophies, if the process is chronic. Headache and gastric disorders are due to improper elimination of bile.

Prognosis.—*Acute* is good; *passive* depends on cause.

Treatment.—*Acute Hyperamia.*—*Forbid* all alcoholic and malt liquors, spices, condiments, and rich foods. When due to over-eating, a good dose of calomel and soda is indicated. Calomel does not increase the secretion and excretion of bile, but favors its formation and elimination. Malarial causes require quinine. Treat all fevers and digestive disorders. Leeches, counter-irritation, and cold compresses to the liver.

Chronic hyperamia demands causal treatment. Sodii phosphas, $\bar{s}$ i-ij, ter die, nitromuriatic acid, taraxacum, carbonated and alkaline waters are good. Stimulate when necessary; improve hygiene and diet. In all cases keep the skin active and attend to other functions.

ACUTE SUPPURATIVE HEPATITIS.

Synonym.—Abscess of the liver.

Definition.—An acute inflammation of the cellular structure of the liver, terminating in the formation of single or multiple abscesses.

Etiology.—Most common in males, in malarial districts and hot climates; seldom seen in the temperate zones. Caused by wounds; contusions; gall-stones; septic thrombi; dysentery; operations for hemorrhoids; pyæmia; acute or chronic hepatitis.

Symptoms.—Some cases are so obscure as to attract no notice until the abscess or tumor is discovered. Symptoms may be those of debility; irritable nervous system; and slight febrile attacks: *chills*; and *pyæmic fever*; slight jaundice—not always present; loss of appetite; slight cough; vomiting; weight and oppression in hepatic region. *Locally*, in marked cases, hepatic region is prominent and fluctuation can be detected; local or general tenderness; throbbing, dull pain reflected to the shoulder and back. *Abscess* may break through the skin into peritoneum, intestines, stomach, pleura, or lungs.

Pathology.—An inflammatory action sets up in the liver-cells at one or more points, from one of the causes mentioned; the inflamed mass becomes infected with pyogenic germs; a disintegration or breaking down of the tissues, with diapedesis of white blood-cells and formation of an abscess. One or more abscesses may form and break into the surrounding structures or become encapsulated. They vary in size from a pea to a hen's egg or larger.

Diagnosis.—Presence of pus, demonstrated by an aspirating needle; sudden vomiting or coughing up of pus, or passing it by the bowels, associated with local and general symptoms, constitute the *positive* diagnostic points.

Prognosis.—Usually bad; some cases recover.

Treatment.—Symptomatic. Large doses of *quinine* for malaria and pyæmic fever; most *stimulating diet*, with wine and supporting treatment; cold compresses or hot turpentine stoops to the liver; morphina to relieve pain. As soon as abscess is suspected, use aspirator and remove pus; tr. iodini or other antiseptics may be injected into the cavity. Laparotomy is justifiable when abscess is demonstrable. Cleanse with peroxide of hydrogen when opened with the knife. I recently met with a case of hepatic abscess in my own practice, and removed one quart of pus with an aspirating needle.

Recovery complete, and abscess has not refilled. The patient is strong, hearty, and at hard work. (See *Med. Bulletin*.)

INTERSTITIAL HEPATITIS.

Synonyms.—Cirrhosis of the liver; sclerosis of liver; hob-nailed liver; gin-drinkers' liver.

Definition.—An inflammation of the interstitial connective tissue of the liver, giving rise to cicatricial bands which contract, cause an atrophy of the liver-cells and a local or general diminution in the size of the organ, interfering with its normal physiological action.

Etiology.—Principal cause is habitual use of alcohol, in frequent, small amounts; condiments; idiopathic; passive congestion. Fagge says, "Syphilis does not cause cirrhosis."

Symptoms.—*First stage* of cirrhosis presents symptoms of a low grade of *hyperæmia*; an uneasy feeling, with now and then slight pain, in the region of the liver, most marked after eating or drinking; slight gastro-intestinal disturbance. Gradually the symptoms increase until the *second stage* or stage of *contraction* occurs. *Abdominal veins enlarged*; *marked abdominal ascites*; *persistent gastro-intestinal catarrh*; attacks of jaundice, becoming chronic in character; *hemorrhage* from the stomach and bowels; *pain* in the liver; spleen enlarged, congested, and may be involved by the same process; hemorrhoids. *Urine* rich in urates and bile pigments; *skin* presents a dirty-yellow appearance; *feces* clay-colored.

Palpation and Percussion.—In *first stage* liver is enlarged and smooth. *Second stage* presents a small area of dullness; liver feels hard and nodulated.

Pathology.—Constant irritation to the interstitial connective tissue (Glisson's capsule); increased blood-supply; diapedesis of leucocytes; and formation of new tissue, causing a

temporary enlargement of the organ. This newly formed cicatricial tissue contracts and causes atrophy of the liver-cells, with diminution of the size, and nodulated appearance. A *hypertrophic form*, in which the organ remains enlarged, gives rise to more profuse jaundice, with tendency to fever and peritonitis. Gastro-intestinal symptoms, enlarged spleen, and dropsy come from obstruction to portal circulation. Peritoneum covering liver is thickened and adherent.

Diagnosis.—*Chronic atrophy* is uniform, and liver presents no nodulated feel. *Cancer* is more rapid, marked cachexia, age, and nodules, independent of alcoholism.

Prognosis.—*First stage* is good. In *second stage* we can only palliate. Destroyed liver-tissue cannot be restored.

Treatment.—All alcoholics and condiments must be stopped at once; gastro-intestinal catarrh needs attention; treat *first stage* as in hyperæmia.

Second Stage.—Treatment is palliative. Put on dry diet to reduce ascites. Chloride of gold and mercury will not restore destroyed liver-cells, as claimed. Oxide of zinc, nitrate of silver, or hydrastis for gastro-intestinal catarrh. Iron, bitters, cod-liver oil, and mineral tonics increase catarrhal symptoms. Alkaline carbonates are too depressing. *Predigested diet*; *sour foods*, such as raw oysters with vinegar, soured pigs' feet and tripe; peptonized milk and meat. *Avoid* fats and sugars. If ascites becomes severe, resort to tapping. Hemorrhage may demand astringents.

SYPHILIS OF THE LIVER.

Description.—Syphilis may be congenital or acquired, and causes a perihepatitis or a partial interstitial hepatitis. *Gumma* form in the liver, causing destruction and atrophy of its cells, and are frequently scattered through the whole organ

as small hemp-seeds, and cause a *cheesy degeneration*. Most common in children and rarely suspected until after death. *Cirrhosis complicates*; ascites and jaundice may or may not be present, according to size and position of gumma. Albuminuria is frequent; may have fever of hectic type.

Treatment.—First stage demands iodides and mercury to check the disease. Treat symptoms as they arise. (See *Syphilis*.)

AMYLOID LIVER.

Synonyms.—Lardaceous, albuminoid, or waxy liver; scrofulous liver.

Definition.—A waxy degeneration of the liver-cells, in which the normal cellular elements are replaced by an amyloid or starch-like substance; so called because it gives the same characteristic reaction with iodine as starch.

Etiology.—Most common in tuberculous subjects and patients suffering with prolonged suppuration of bone, syphilis, and chronic malaria.

Symptoms.—Indigestion, nausea, vomiting, and diarrhoea. Jaundice rare; feeling of fullness over liver; pain slight or entirely absent; liver dullness increased—may be twice the normal size; palpation gives a hard feeling, with smooth surface and rounded edge; spleen enlarged; anaemia; urine is increased, contains albumin, and, at times, may give starch reaction. Ascites is rare.

Pathology.—Liver enlarged, pale, smooth, shiny, and cuts like wax. Waxy material is found in the liver-cells and capillaries. Iodine applied to a section gives a brown or blue reaction. Aniline violet stains the amylaceous matter pink, and liver structure violet or blue. Other organs undergo the same change.

Prognosis.—Unfavorable.

Treatment.—Remove the cause; stop suppuration in bones and joints; treat syphilis and tuberculosis. Potassium iodide, hydriodic acid, quinine, and iodide of iron. Treat symptoms. Stimulate and give good diet.

FATTY LIVER.

Description.—Fatty degeneration of the liver is due to corpulence and wasting diseases, such as cancer or consumption. Liver is large, smooth, and infiltrated with fat; liver-cells contain fat-globules; fat is deposited in the parenchyma; liver is doughy, and pits on pressure; edge is rounded; cuts very easily. Subjective symptoms are not marked. Objective symptoms show an increased area of dullness over liver; no pain on pressure; no jaundice, except in bad cases; obstinate diarrhœa.

Treatment.—Remove cause; treat corpulency, phthisis, or debilitating diseases. Never give cod-liver oil or fat, as it increases the difficulty. Treat diarrhœa with astringents; meet all complications as demanded.

HEPATIC CANCER.

Synonyms.—Cancer of the liver; hepatic carcinoma.

Definition.—A malignant growth in the liver, primary or secondary; occurring after the fortieth year; accompanied by pain, cachexia, and hepatic disorders.

Etiology.—Cancer of the liver is hereditary, or develops primarily under some irritating influence; extends from other organs, and is secondary. Most common in women between the fortieth and sixtieth years.

Symptoms.—During the early stages symptoms are obscure. Later, there is a fullness and weight in the right hypo-

chondrium; severe shooting pain, reflected to right shoulder and umbilicus; great sensitiveness to pressure; liver enlarged, and one or more nodular tumors may be felt. Ascites, gastrointestinal catarrh, hemorrhage, and jaundice accompany when the portal circulation and gall-ducts are obstructed by the tumor. Feet swollen; thrombosis of femoral veins not uncommon; ascites may conceal physical signs, and requires tapping before satisfactory examination can be made.

In all forms of cancer the red corpuscles of the blood number between one and two million to the cubic millimeter, and if taken with other symptoms are almost diagnostic.

Pathology.—*Medullary cancer* is most common, and varies from a large, soft, friable mass to a hard, lobulated, scirrhus variety. May be soft, disintegrating, and black; marked hyperemia; atrophy and degeneration of the liver-cells; local and adhesive peritonitis, if the cancer is near the surface of the organ; whole gland infiltrated at times, or, rarely, a small, isolated epithelioma is found.

Diagnosis.—Age; cachexia; marked ascites; anemia; blood-count; pain and local tenderness; nodulated tumor; rapid emaciation and decline of patient.

Prognosis.—Always bad; patients die within the first year.

Treatment.—Relieve local pain by leeches, counter-irritation, or morphina; remove small amounts of fluid from abdomen at a time. Clinical experience shows that arsenic, conium, mercury, and other drugs only palliate, and death will result sooner or later.

HYDATIDS OF THE LIVER.

Description.—Hydatids, single or multiple, are due to the *Tania echinococcus*, a peculiar form of tapeworm, and consist of cystic tumors that contain a colorless, non-albuminous fluid

and the eggs of the worm. Most common in Iceland; is due to the ova of the worm, which are derived from dogs, sheep, and pigs, and are carried through the air, water, and food into the system, and develop in the spleen, liver, or kidneys. Cysts project from surface of liver as fluctuating tumors; they sometimes dry up, or continue to enlarge and ultimately rupture. Little or no jaundice; no fever or tenderness; obstruction of portal circulation or bile-ducts, by pressure, causes jaundice, gastro-intestinal symptoms, ascites, and enlarged spleen.

Diagnosis.—Determined by aspirator, non-albuminous fluid and presence of ova, demonstrated by microscope.

Prognosis is good; if there are multilocular cysts it is bad. Hydatids last about four years and grow very slowly.

Treatment.—Draw off fluid with aspirator, and inject a solution of *fel bovinum* or *tr. iodini*. Electrolysis, with needles thrust into the cyst, sometimes cures. If suppuration is suspected, open freely and treat as suppurative hepatitis. Attend to diet and hygiene. Multilocular cysts resist all treatment and are fatal.

ACUTE YELLOW ATROPHY.

Synonyms.—Malignant jaundice; hemorrhagic jaundice; acute parenchymatous degeneration of the liver.

Definition.—An acute, degenerative inflammation of the cellular elements of the liver, which results in marked jaundice, great depression, nervous symptoms, atrophy of the liver, and terminates fatally.

Etiology.—Most common in young pregnant women; syphilis; venereal infection; poisoning by phosphorus, antimony, or arsenic.

Symptoms.—*Prodromal symptoms* are gastro-intestinal ea-

tarrh, tenderness of abdomen, rapid pulse, headache, and slight jaundice. *Onset* is heralded by vomiting of mucus and a dirty-brown or black material not unlike that of yellow fever. Patient is desperate, delirious, or comatose; convulsions or trismus; dilated pupils; temperature 104° F.; pulse very rapid; tongue and teeth coated; spleen enlarged; and jaundice marked. Hemorrhage from the nose, bronchi, or stomach, which ultimately results in death.

Pathology.—Liver nearly one half its original size; capsule puckered and yellow; a dirty-gray deposit between lobules, and lobules contain leucin; fatty degeneration. Gall bladder and ducts empty; blood thick and dark; urine contains bile and albumin; kidneys pigmented, and brain softened. Nervous symptoms are due to toxæmia. Pathology is not positively explained.

Prognosis.—Duration is from twelve hours to one week, and recovery is rare.

Treatment.—Since pathology is unknown, *treatment is entirely symptomatic*. A large, free purgative at onset, regardless of pregnant condition. Mineral acids, alcohol, nux vomica, small doses of phosphorus, and counter-irritation are palliative measures. Ice, hydrocyanic acid, bismuth, and arsenite of copper are given for vomiting.

PYLEPHLEBITIS.

Description.—An inflammation of the branches of the portal vein and the tissues in which they are imbedded. There are *two distinct classes*: the *suppurative* and *adhesive*.

Suppurative pylophlebitis is due to the extension of some suppurative inflammation to the walls of the portal vein and its branches; or from septic thrombi, due to abscess of the stomach, spleen, or other organs. Inflammation begins in vessel-

wall; a thrombus is formed; it suppurates, and causes ulceration of the vein, dissemination of pus into general circulation, and pyæmia. There is pain in epigastrium; engorged spleen and ascites. Jaundice is absent; chills; fever; and symptoms of pyæmia. Frequent vomiting; diarrhœa, alternating with constipation. This is a *rare condition* and is *always fatal*. Treatment is palliative.

Chronic adhesive pylephlebitis, or non-suppurating thrombus of portal vein, is caused by pressure of tumors, cirrhosis of liver, syphilis, or thickening of pylorus. *Symptoms* are those of congestion; engorged spleen; catarrh or hemorrhage of stomach and intestines; obstinate ascites; and marked collateral circulation through omentum; liver atrophies, and is not tender. *Treatment* is the same as that of advanced cirrhosis of liver.

CATARRH OF THE BILE-DUCTS.

Synonym.—Catarrhal jaundice.

Definition.—A catarrhal inflammation of the mucous membrane of the bile-ducts, accompanied by varying degrees of jaundice and intestinal indigestion.

Etiology.—Hyperæmia of liver; hepatic cancer; obstructive heart-diseases; extension from duodenal catarrh; passage of gall-stones; heat or cold; malaria; improper drink or diet; most common in plethoric and inactive women.

Symptoms.—Uneasiness and tenderness in region of liver; gastro-intestinal disturbances; *putty-like, offensive stools*; tongue coated; little or no fever; heart slow and weak; symptoms of jaundice; *itching of skin*; *urine* loaded with bile and salts; liver enlarged. Trouble leaves in a few weeks, but may become chronic and last for months, resulting in permanent narrowing of the duct and consequent disorders.

Treatment.—Rest in bed. When due to duodenitis, treat as indicated in that disease. Hot drinks, with sodium bicarbonate, to remove mucus from stomach and duodenum; diaphoretics, diuretics, and Carlsbad mineral waters. Nitromuriatic acid before meals; sodium sulphate is the best laxative; sodium phosphate in the chronic form. Regulate *diet* to skim-milk and lean beef; *avoid* starches, fats, and sugars. When local tenderness is marked, counter-irritation, leeches, hot poultices, or fomentations. Nothing will *relieve pruritis* in this condition better than large doses of pilocarpus to produce diaphoresis.

HEPATIC CALCULI.

Synonyms.—Gall-stones; biliary calculi; liver-stones.

Description.—Gall-stones are hard masses composed of bile-salts, mucus, and inspissated bile. They vary in size from a hemp-seed to a hen's egg, and usually have a nucleus of hardened mucus. They are found in the gall-bladder, cystic duct, hepatic duct, or common bile-duct. There may be one or several hundred impacted in the gall-bladder.

Symptoms.—As long as the stone remains in the gall-bladder, no symptoms may be manifested; many impacted stones are recognized by a hard tumor on palpation. When a gall-stone enters the duct, there is an attack of *hepatic colic*. Without any previous symptoms, patient is seized with violent piercing and griping pain in right hypochondrium, reflected to right shoulder and umbilicus; skin cold and clammy; liver enlarged and bulging; pulse slow; *no fever*; convulsions and syncope from intense pain; persistent and obstinate vomiting. After one hour or more the paroxysm ceases suddenly with complete relief, indicating the passage of the stone into the duodenum.

Jaundice comes on after the attack, from inflammation of the mucous lining of duct; liver is tender for several days. Gall-stone is passed with stool, is vomited, or may have entered the gall-bladder again. Attacks may occur at intervals of a few days or weeks, if other stones remain.

Sometimes gall-stones become impacted and cause ulceration and peritonitis. Obstruction of the common duct by a gall-stone results in fatal jaundice or ulceration.

Diagnosis.

HEPATIC COLIC.	RENAL COLIC.
Pain always on the right side.	Pain may be on right or left side.
Pain reflected to right shoulder and umbilicus.	Pain reflected along ureter to testicle and head of penis, with retraction of same.
Urine shows no pathological condition.	Urine bloody and contains evidence of the trouble.
Stone is found in stools or vomit.	Stone is often found in urine passed.
Liver very tender; jaundice after the attack.	Tenderness in loins along ureter, with no jaundice after attack.

Treatment.—*Paroxysm.*—Hypodermic of morphinæ sulphas, gr. $\frac{1}{8}$ to $\frac{1}{4}$, with atropinæ sulphas, gr. $\frac{1}{120}$, relieves pain, stops spasm of muscular coat of gall-duct, and favors passage of the stone. *Anæsthetics*; morphina may be given internally in hot water; chlorodyne or chloroform, gtt. xx-xxx, every ten minutes; mustard poultices; hot fomentations. Very hot alkaline drinks often relieve vomiting and assist in relaxing spasm. Stimulate if necessary. Resulting inflammation is treated with counter-irritation and alkalies.

Preventive Treatment.—Exclude fat, sugars, lime salts, and malted liquors from diet; give only lean meat and vegetables.

Internally.—Sodium phosphate, ʒj, with arsenious acid, gr. $\frac{1}{20}$, three times daily, for months. *Sodium succinate*, gr. iij-v, three times a day, long continued, often produces a cure or cessation of attacks. It is doubtful if anything except bile

will dissolve gall-stones in the gall-bladder. Alkalies, ether, fel bovinum, and turpentine are recommended for their *so-called solvent action*, but by the time they are taken into the blood and reach the liver and bile, they are so weak as not to accomplish this result. They may increase the flow and reaction of bile, causing *it* to act as the solvent. Moderate exercise, and *all the emunctories should be kept active*. Several ounces of olive-oil, given at one dose, may assist in the expulsion of gall-stones, and has been recently recommended.

DISEASES OF THE SPLEEN.

SPLENIC HYPERÆMIA.

Synonyms.—Congestion of the spleen; splenic fluxion.

Description.—The spleen, normally, weighs about eight ounces, and its general structure favors active congestion. *Acute congestion* or fluxion is caused by malaria, typhoid fever, septicæmia, portal obstruction, relaxed splenic tissue, blows, injuries, exercise, and physiological enlargement after meals.

Spleen becomes four times its normal size in some cases; little or no pain; local tenderness in left hypochondrium. Death may ensue from rupture. Area of percussion dullness is increased.

Treatment.—*Causal*; quinine in large doses; *cold douches directly over the spleen*; faradization or galvanism; ergot hypodermically or by stomach; removal from malarial districts.

SPLENITIS.

Description.—Inflammation of the splenic structure comes from excessive hyperæmia, malaria, fevers, and embolic infarctions. Primary inflammation is rare. Spleen is tender, swollen, and painful; may become friable, cheesy, or result in abscess; localized peritonitis; sympathetic vomiting; chills and fever.

Treatment.—*Palliative.*—Leeches, counter-irritation, and hot fomentations; ice and carbonated alkaline waters for

vomiting; morphina for pain. Evacuate abscess at once by aspirator or incision; quinine in full doses; treat cause.

SPLENIC HYPERTROPHY.

Description.—Due to malaria, leucæmia, cirrhosis, or chronic splenitis. Spleen is broad, hard, and has rounded edges; has a deep-brown color, or, if malarious, gray; capsule thickened; trabecula rigid; pulp reduced to a cheesy mass; anæmia; shortness of breath; nasal hemorrhage; hydramia and dropsy.

Treatment.—Quinine, in malaria; change of residence to non-malarious district; cold douches and electricity to spleen; iron and arsenic for anæmia. Hypertrophy from pyelephlebitis resists all treatment. To reduce *ague-cake* (a spleen enlarged from malaria), stand patient before a hot, open fire until the skin over spleen is red and glowing; apply a piece of ung. hydrargyri oxidi rubri, as large as a walnut, and rub in well for several minutes; allow it to bake in before the fire; this process to be repeated daily. Ergot, hypodermically, may do good.

AMYLOID SPLEEN.

Description.—Amyloid degeneration of the spleen is associated with the same disease in the liver and kidney, and presents similar symptoms. Spleen is heavy, hard, pale, smooth, and gives starch reaction with iodine. Anæmia, cachexia, dropsy, and marked increase of splenic dullness.

Treatment is of little avail, and is entirely symptomatic.

THE URINE.

QUALITATIVE URINARY ANALYSIS.

Normal urine varies under different circumstances of diet, heat, cold, and amount of liquid taken. More urine is passed when the pores of the skin are inactive. The *average quantity* passed in twenty-four hours is about forty to fifty fluid ounces (1200 to 1500 c.c.). *Color*, pale amber, or shades of yellow due to presence of urobilin and indican. *Reaction*, slightly acid. *Specific gravity* varies from 1.015 to 1.020, and is determined by the urinometer.

Normal constituents of urine are: urea, about five hundred grains (thirty grams) daily; uric acid, fifteen grains (one gram); phosphoric acid, thirty to sixty grains (two to five grams); chlorides, two hundred and forty-eight grains (sixteen grams); hippuric acid; creatinine; sulphuric acid; salts of sodium, ammonium, potassium, calcium, and magnesium.

Abnormal urine contains bile pigments or salts; albumin; glucose; pus; blood; oxalic acid or oxalates; tyrosin; leucin; epithelial cells and tube-casts.

CHEMICAL TESTS.

ALBUMIN.

Heat Test.—Filter and acidify urine with acetic acid; fill test-tube nearly full of urine, and boil upper layers over spirit-lamp. If albumin is present, a coagulated mass is formed in the part boiled, and contrasted with clear urine below. Addition of *nitric acid* will not dissolve coagula of albumin.

Nitric-acid Test.—(Heller's test.) Place several drops of pure nitric acid in bottom of test-tube, and allow urine to flow down sides of tube to form a distinct layer on the acid. If albumin is present, a white, coagulated ring appears at the zone of junction.

Picric-acid Test.—A concentrated, acidulated solution of pure picric acid, added to urine, will coagulate albumin, and cause a precipitate if allowed to stand.

SUGAR.

Liquor-potassæ Test.—(Moore's test.) To one part of urine, add one half as much liquor potassæ; mix thoroughly and boil upper layers; contrast boiled part with the cold part below, and if sugar is present, the upper part is a canary-yellow or red. Nitric acid decolorizes it.

Bismuth Test.—Treat two volumes of urine with one of liquor potassæ; add a small quantity of subnitrate of bismuth, and boil. Sugar reduces bismuth to the black suboxide.

Fermentation Test.—Yeast added to saccharine urine at a warm temperature causes fermentation and generation of carbon dioxide.

Fehling's Test.—This consists of two separate preparations prepared and used as follows:

No. 1.

R̄

Cupri sulphatis (pure crystals)..... 34.64 gm.
Aque destillatæ.....q. s. ad. 500.00 c.c.

No. 2.

R̄

Potassii et sodii tartratis (pure cryst.).. 173 gm.
Sodii hydratis (solution 1.34 spec. grav.) 100 c.c.
Aque destillatæ.....q. s. ad. 500 c.c.

Mix equal volumes of these two solutions; add a few drops of urine, after thoroughly boiling, and boil again. If sugar is present, red oxide of copper is precipitated. This is one of the most reliable tests.

PHOSPHATES.

Alkalinize urine with liquor potassæ or aqua ammoniæ, and boil. Phosphates are precipitated as a light-colored flocculent precipitate; acetic or nitric acid dissolves them. *Magnesia mixture* precipitates alkaline phosphates.

URIC ACID.

Add strong nitric or hydrochloric acid to urine. Uric acid precipitates as small reddish-brown crystals.

BILE AND SALTS.

One drop of fuming nitric acid placed on a porcelain plate and allowed to blend with a drop of urine causes a play of colors from green, blue, violet, red, yellow, to brown, when bile pigment is present.

CHLORIDES.

Nitrate of silver precipitates as a white chloride when added to urine containing chlorides. Mucus is precipitated by acetic acid, in the shape of delicate fibrillated bands; as mucin.

MICROSCOPICAL EXAMINATION.

By means of the microscope, blood, pus, epithelium, casts, crystals, and bacteria are detected.

DISEASES OF THE KIDNEYS.

URÆMIA.

Description.—A *symptom* of kidney-disease due to suppression of the normal excretion of toxic substances (urea) from the blood through the urine. Occurs in course of Bright's disease; albuminuria of pregnancy (puerperal convulsions); obstruction of both ureters; retention or suppression of urine; and some fevers.

Acute uræmia begins suddenly with convulsions (eclampsia) similar to epilepsy; wild, staring gaze; tonic muscular contraction, followed by twitching clonic spasms; pupils dilated; pulse quick; temperature high; and coma. Recovery is the rule, if properly treated.

Chronic Uræmia.—Drowsiness; headache; nausea and vomiting; dilated pupils; muscular twitching, without loss of consciousness; chilliness; fever; dyspnœa at night. This condition may go on a long time and suddenly develop an acute attack. Urine scanty; urates diminished; albumin present.

Prognosis depends on the cause; always grave. Puerperal eclampsia is often cured.

Treatment.—*Symptomatic*, and depends on cause. Venesection is valuable in plethoric persons; *free purgation*; *diaphoresis*. In *convulsions*, administer anæsthetics, chloral, bromides, or morphina—the first two being the most reliable. Keep patient absolutely quiet, and avoid excitement or irritants.

RENAL HYPERÆMIA.

Synonym.—Congestion of the kidney.

Definition.—An active or passive engorgement or congestion of the vessels of the kidney.

Etiology.—*Active Congestion.*—Direct injury; cold; fevers; medicines, such as turpentine and cantharides; inflammation.

Passive Congestion.—Obstructive diseases of heart, lungs, liver, or portal system; pressure of tumors on the venous trunks.

Symptoms.—*Active.*—*No pain or local tenderness*; little or no fever; general malaise, headache, and sometimes vomiting; irritability of bladder; frequent micturition. *Urine* increased; pale in color; low specific gravity. If renal veins are obstructed, urine is scanty, high-colored, contains blood, casts, and albumin.

Passive.—Symptoms of cause; urine scanty, high-colored, and loaded with urates. Pain in testicle and heavy feeling in loins; no fever.

Pathology.—Kidney is large, red, and engorged with blood; Malpighian bodies red and inflamed; epithelial lining of tubules in catarrhal state. Chronic congestion is the first stage of cirrhosis.

Prognosis.—*Active cases* recover promptly, if properly treated. *Passive cases* are liable to cause Bright's disease, and depend on cause.

Treatment.—*Active Congestion.*—Rest in bed; discontinuance of irritants; mildest diet; free use of alkaline waters to dilute and alkalinize urine; no stimulating diuretics; infusion of digitalis is best heart- tonic and diuretic; small doses of Epsom salts are recommended. Leeches, hot poultices, dry or wet cups over loins; venesection in very acute cases; free

diaphoresis depletes blood and relieves tension on kidneys. Irritability of bladder is relieved by morphina, liquor ammonii acetatis, and nux vomica.

Passive congestion is treated according to cause.

ACUTE TUBAL NEPHRITIS.

Synonyms.—Acute Bright's disease; acute desquamative or croupous nephritis; acute parenchymatous nephritis.

Definition.—An acute inflammation of the mucous lining of the uriniferous tubules, recognized by fever, pain over the kidneys, and scanty, high-colored urine, containing blood, albumin, epithelial cells, and tube-casts.

Etiology.—Scarlet fever; high fevers; cold; injury; congestion, drugs. Most common in the young.

Symptoms.—*Onset* sudden; chill, fever, and vomiting; constant desire to urinate; sharp pain over both kidneys. Uremia may supervene. *Urine* small in amount (f $\frac{3}{4}$ i-v in twenty-four hours); high-colored; high specific gravity; albumin (one half to one third bulk); blood; salts; epithelial cells and tube-casts. Local or general dropsy soon appears, beginning by puffiness under the eyes. Patients are very susceptible to such complications as pneumonia, pleurisy, peritonitis, or pericarditis.

Pathology.—Kidney enlarged; capsule thick, opaque, and not adherent; color deep red; uriniferous tubules swollen and filled with epithelial cells, blood, and mucus. Dropsy is due to obstructed circulation and suppression of urine.

Prognosis.—Lasts one to five weeks, and usually terminates in recovery. May have any of the complications.

Treatment.—*Rest in bed*; diet of skimmed milk and broths; pure *alkaline waters*, freely used; counter-irritation, cups, or leeches over kidneys; regulate bowels daily with saline

cathartics. Tr. aconiti, gtt. j, every half-hour, often relieves acute cases.

Dropsy lessened by elaterium, oleum tigllii, jalap, or magnesii sulphas internally; free diaphoresis by hot baths or pilocarpus jaborandi. Potassii acetat, gr. xv, with infusion digitalis, f 5 ij, every three hours, as a diuretic. Coma, convulsions, and dropsy indicate jaborandi.

Convalescence.—Basham's iron mixture, f 5 ij, ter die. Limit foods to skimmed milk and light, non-albuminous diet; prohibit all spices and condiments, volatile oils and alcoholics.

CHRONIC TUBAL NEPHRITIS.

Synonyms.—Chronic desquamative nephritis; chronic Bright's disease; large white or fatty kidney; chronic parenchymatous nephritis.

Definition.—A chronic inflammation of the mucous lining of the uriniferous tubules, recognized by scanty urine of high specific gravity in the early stages and low in the later, with granular casts, epithelium, and albumin; marked dropsy, gastro-intestinal catarrh, and frequent attacks of uræmia.

Etiology.—Cold, damp, intemperance, toxic malaria, syphilis, and tuberculosis. Sometimes comes from acute Bright's disease; may be idiopathic; rare in old or very young persons.

Symptoms.—If it follows acute Bright's disease, the symptoms are more chronic; general dropsy; effusion into serous cavities; urine scanty and albuminous; cardiac hypertrophy or dilatation, and a tense, wiry pulse.

Insidious Cases.—Anæmia; loss of appetite; headache; nausea; frequent micturition and no pain in kidneys; feet œdematous at night and puffiness around eyes in morning; dropsy slowly increases and causes great dyspnoea; gastro-intestinal catarrh; frequent attacks of uræmia; retinitis albuminuria.

Urine scanty at first, but slightly increased in later stages; urea diminished; hæmaturia at times; albumin nearly one half when boiled (two percent. to four percent. by weight); specific gravity high at first, later it is low; tube-casts—hyaline, epithelial, and granular; large masses of epithelial cells (showing fatty degeneration); and granular matter. Hypertrophy of left ventricle of heart; slight fever at times. Subject to pneumonia, pleurisy, peritonitis, pericarditis, bronchial and gastro-intestinal catarrh, œdema of lungs or glottis, sloughing or inflammation of skin.

Pathology.—*First Stage* (large white kidney).—Kidney twice its normal size and weight; capsule dull, opaque, and is easily stripped off; color dull gray or red; pyramids very red; ecchymotic spots; glomeruli and uriniferous tubules inflamed and stripped of epithelial lining, allowing transudation of albumin into urine. Tubes filled with epithelium, fat-globules, and granular masses.

Second Stage.—Kidney rough; nearly normal in size; capsule adherent; pale, white color; bands of connective tissue; degenerated kidney-cells; tubes filled with degenerated epithelium and casts; portions of kidney atrophied; slight waxy degeneration.

Diagnosis.—See *Amyloid Kidney*.

Prognosis.—Unfavorable; patients rarely die of the disease itself, but from one of its complications; may be held in check many years, but is *never cured*.

Treatment.—Absolute rest, and freedom from all business cares; change of scene; uniform dry temperature; flannel next skin. *Avoid* condiments, volatile oils, alcohol, and spices.

Diet.—Pure, sweet, skimmed milk, four to six ounces, every three or four hours, night and day—may be given hot; no other diet or drink. Vary food by adding pepsin to milk; substitute whey or fresh butter-milk. Such diet diminishes

albuminuria, clears up vision, and aids general improvement. When albumin disappears, add fresh juice of orange, apple, or peach; later, rice, tapioca, sago, toasted bread, and, finally, rare meat, eggs, or mutton.

No specific medication. Opium is strictly contraindicated on account of its apparently irritating action on the urinary organs. Anæmia indicates iron, arsenic, and cod-liver oil. Uræmic symptoms demand pilocarpus jaborandi and hydragogue cathartics. Dropsy is relieved by Basham's iron mixture, jaborandi, diuretics, and evacuants, if patient is not too weak. Aspiration or puncture is often followed by erysipelas. Keep bowels open and active.

CHRONIC INTERSTITIAL NEPHRITIS.

Synonyms.—Renal cirrhosis; gouty kidney; contracted kidney; cirrhotic Bright's disease.

Definition.—A chronic inflammation of the interstitial connective tissue of the kidneys, causing a diminution in their size; little or no dropsy; increased flow of urine, albuminous and of low specific gravity.

Etiology.—Gout, syphilis, lead-poisoning, alcohol, exposure, nervousness, and an ultimate effect of gonorrhœa. Most common in men after fortieth year.

Symptoms.—*Begins insidiously*, without symptoms to indicate kidney trouble. Later, there is frequent urination, vertigo, palpitation of heart, uneasiness, dyspnœa, and dilatation of left ventricle of heart. Pulse full, tense, and bounding; incessant cough. Dropsy is usually absent; eyes are puffy and vision disordered. Nausea, vomiting, gastro-intestinal catarrh, diarrhœa, anæmia, debility, and headache. Uræmic symptoms and convulsions; apoplectic attacks common.

Complications.—Pneumonia, pericarditis, endocarditis, erysipelas, apoplexy, carbuncles, and uræmia.

Urine increased; pale in color; specific gravity low—rarely above 1.010^o; albumin absent or extremely small in amount; urea not decreased at first; tube-casts few, and are granular or fibrinous molds; fat-globules are not constant.

Pathology.—Kidneys reduced in size; capsule adherent; surface granular; pyramids small and dark; cysts may exist in kidney structure. There is an infiltration of leucocytes into the interstitial substance which form new fibrinous tissue. This contracts, causing shrinkage of organ, with atrophy and obliteration of some uriniferous tubules. Malpighian capsules are thick and glomeruli crowded together. Epithelial cells in tubules and glomeruli are degenerated; section of kidney is tough; heart hypertrophied and vessels degenerated, hence the frequency of apoplexy; atrophy of optic nerve and blindness.

Diagnosis.—See page 273.

Prognosis.—Always fatal; may continue several years; worst form of Bright's disease.

Treatment.—With such a poor prognosis, treatment is not encouraging. Saline diuretics are of little use. Avoid every possible cause. When first symptoms manifest themselves, put patient in bed between blankets and keep him there until symptoms subside. Nitroglycerin, gr. $\frac{1}{100}$, or potassium iodide, gr. xx-xxx, daily, reduces arterial tension—the latter preventing hyperplasia. Aconite and veratrum control the heart. Dyspepsia indicates a mild diet; dilute hydrocyanic acid for vomiting; tincture of iron, columbo, or quinine for anæmia. Counter-irritation is of doubtful utility. Stimulate when indicated. Treat uræmia.

AMYLOID KIDNEY.

Synonyms.—Lardaceous or waxy degeneration of kidney; albuminoid kidney; amyloid Bright's disease.

Definition.—A waxy degeneration of the kidney-tissues, usually accompanying a similar disorder in the liver and spleen, recognized by polyuria and waxy tube-casts.

Etiology.—Suppuration in bones; syphilis; tuberculosis; cancer.

Symptoms.—*Urine* increased, pale, and specific gravity low; albumin marked; urea normal or slightly diminished; few tube-casts, which are pale or transparent, giving reaction with iodine; marked anemia; liver and spleen involved; emaciation; sallow face; profuse diarrhœa; thirst; heart not involved; dropsy at first is slight, later it is marked.

Pathology.—Kidneys are large, smooth, and cut like wax; capsule easily separated; characteristic reddish-brown reaction with iodine. Process begins along the vessels, involves other structures, and causes atrophy of glomeruli and tubules.

Diagnosis.

ACUTE TUBAL NEPHRITIS.	CHRONIC TUBAL NEPHRITIS.	CHRONIC INTERSTI- TIAL NEPHRITIS.	AMYLOID KIDNEY.
Urine scanty.	Urine increased.	Urine increased.	Urine increased.
Albumin marked.	Albumin marked.	Albumin small in amount or ab- sent.	Albumin marked.
Blood and simple epithelial casts.	Granular epithe- lial casts; fatty degeneration; no blood-casts.	Few hyaline gran- ular casts.	Few transparent casts; give reac- tion with iodine.
Dropsy extensive.	Dropsy a promi- nent symptom.	Dropsy absent or slight.	Dropsy little, ex- cept late.
History of acute onset; pain.	Antecedent at- tacks; slow on- set.	Slow insidious on- set.	Follows wasting diseases and sup- puration.
Uræmia.	Uræmia.	Uræmia.	Uræmia absent.
Heart functionally affected.	Hypertrophy of left ventricle.	Dilated left ventri- cle.	Hypertrophy of left ventricle.
Occurs in children and young adults.	Middle-aged per- sons.	After forty, in men.	Any age.
No retinitis.	Retinitis albumi- nuria.	Retinitis albumi- nuria.	No retinitis.

Prognosis.—Depends on cause; if cause is removable and case not too far advanced, it can be checked.

Treatment.—Remove cause, if possible; build up patient, and treat as in amyloid liver. Ammonium chloride, iron iodide, and other iodides.

PYELITIS.

Synonym.—Inflammation of the pelvis of the kidney.

Definition.—An inflammation of the mucous membrane of the pelvis of the kidney, acute or chronic, recognized by chill, fever, pain radiating to the testicle, and acid urine, turbid with mucus and pus.

Etiology.—Cold; extension from bladder; gonorrhœa; balsams and resins. Complicates scurvy, typhoid, typhus, and exanthematous fevers.

Symptoms.—*Acute cases* commence with rigors and fever; pain in lumbar region, radiating along ureter to testicle; painful micturition. *Urine* increased or diminished; dark-colored; high specific gravity; acid reaction; urates and chlorides lessened; epithelial cells from pelvis of kidney; pus and blood-corpuscles.

Chronic Pyelitis.—*Urine* increased; pale straw-color; acid reaction; low specific gravity; marked sediment; albumin; pus-cells (often in long or oval plugs); blood and epithelial cells not constant, unless tubules are involved. Uremia complicates pyelitis.

Pathology.—Pelvic mucous membrane engorged, red, and covered with mucus and pus-cells; epithelial cells are shed; blood exudes. A diphtheroid membrane is often present. As the process continues, inflammation extends to the uriniferous tubules and kidney structure, causing suppuration (pyelonephritis). Pus and urine may accumulate in the pelvis of the

kidney from obstruction of the ureter (*pyonephrosis*), and discharge through the kidney structure or suddenly flow into the bladder, when obstruction is removed. Urinary calculi are often found in the pelvis of the kidney.

Diagnosis.—*Cystitis*.—Urine is alkaline; suprapubic tenderness; pelvic epithelium absent. In *perinephritis* the urine remains normal.

Prognosis.—Following fevers it is good; chronic cases are bad; pyonephrosis may cause death by perforation; kidney may be totally destroyed or disabled.

Treatment.—*Hygienic*.—Absolute rest; plenty of alkaline, carbonated waters. Avoid alcohol, condiments, volatile oils, and irritating foods; strict milk diet.

Locally.—Counter-irritation; hot fomentations; leeches; dry or wet cups.

Internally.—Diuretics; salol, gr. v, ter die, diminishes fever, alkalinizes urine, and is antiseptic; tr. benzoin, gtt. v–x, ter die. Such remedies as balsam of copaiba, quinine, tannin, pix liquida, turpentine, iron, and lead reduce discharge of pus and may do some temporary good. Opium to relieve pain. In pyonephrosis or impacted calculi, surgical means are indicated.

HYDRONEPHROSIS.

Definition.—An accumulation of urine and secretions in the pelvis of the kidney, due to an obstruction of the ureter, bladder, or urethra.

Symptoms.—*Unilateral*.—A tumor is found in lumbar region, which gradually enlarges; smooth or lobulated; tense or fluctuating; dullness on percussion; may suddenly diminish in size, with a copious flow of urine, due to temporary removal of the obstruction; it soon refills. Pressure symptoms,

such as pain, vomiting, disordered heart, and digestion. *Urine* is normal, as the other kidney performs the function of both.

Bilateral.—Suppression of urine, uræmia, and death, if not relieved. Suppression of urine may not be complete.

Pathology.—Ureter and pelvis of the kidney are greatly distended; pyramids flattened; kidney structure atrophied; cyst may contain from one to three pints of fluid, and is sometimes lobulated and divided by septa. Fluid is pale yellow; contains albumin and pus, urea and uric acid—in fact, it is similar to a diluted urine. Obstruction is caused by impacted calculi; tumors; cancer; cicatricial bands; congenital, or due to obstruction in bladder or urethra.

Prognosis.—*Unilateral* causes little or no trouble for years, and is not fatal unless the other kidney fails to perform its function. *Bilateral* is fatal from uræmia or primary cause, if not removable.

Treatment.—*Causal*.—Remedy strictures of urethra, enlarged prostate, or retention. Tumor is lessened by aspiration or surgical operation. Excision (nephrectomy). Massage often relieves obstruction, if used over the tumor. Treat symptoms.

PERINEPHRITIS.

Definition.—An inflammation of the cellular tissue surrounding the kidney, terminating in resolution or suppuration.

Etiology.—Blows, sprains, metastasis, extension, cold, secondary to fevers.

Symptoms.—Chill, high fever, and severe pain over kidney. Urine normal. *Onset* may be insidious, with a dull, sickening, aching pain, radiating to testicle and groin; pain increased by pressure; patient lies with leg of affected side flexed on abdomen; when standing, body is inclined to affected side. Chills, rigors, and pyæmic fever indicate suppuration, with

formation of abscess (*perinephritic abscess*), that is felt as a tumor between the last rib and iliac crest. Pus burrows along lumbar muscles and opens on the back or in the groin under Poupart's ligament. May perforate kidney, peritoneum, colon, ilium, stomach, bladder, vagina, or diaphragm. Capsulation sometimes occurs.

Pathology.—Begins as a simple inflammation with exudation; septic infection and suppuration follow. Kidney is infiltrated with pus, and often contains numerous sinuses; perinephritic tissue may be one mass of pus. Pus varies in character from a pure, sweet, to a very offensive, degenerated mass.

Treatment.—Rest in bed; applications of ice over kidney; keep bowels active by enema; opium for pain, and chloral for insomnia. Inunctions of belladonna and mercury may prevent abscess. Evacuate pus at once; sustain patient with quinine, iron, cod-liver oil, and very best food.

FLOATING KIDNEY.

Synonym.—Movable kidney.

Description.—Floating kidney is a term given to one that is freely movable from its normal position, and is *congenital* or *acquired*. Recognized by a feeling of weight or dragging in loins; sometimes pain, aggravated by walking, running, and jumping; relieved by recumbent position; attacks of vomiting, malaise, and great tenderness at times, but they soon subside. Palpation of abdomen reveals a kidney-shaped tumor that glides from the hand and disappears; pressure on this tumor causes a sickening pain reflected to testicle or ovary.

Treatment.—*Surgical.*—Application of trusses or bandages. Nephrorrhaphy or nephrectomy. Regulate exercise and occupation.

RENAL CANCER.

Description.—Cancer of the kidney is *primary* or *secondary* and occurs in very young or old persons. *Scirrhus* and *medullary* are most common forms; one kidney is affected and the other normal. An irregular, nodulated, tender tumor in region of kidney; hæmaturia not constant. Urine contains cancer-cells; disorganized epithelial, blood, and pus cells; albumin. Pain is variable and at times very severe, radiating along ureter to testicle or ovary, the loin and hypochondrium; testicle not retracted. Nausea; anorexia; irregular bowels; anaemia, emaciation, and cachexia. Death ensues in six months to two years, from exhaustion, hemorrhage, peritonitis, or *secondary* involvement.

Treatment.—*Palliative.*—Opium for pain; tonics; predigested food; local applications; and general symptomatic treatment.

RENAL TUBERCULOSIS.

Description.—Renal tuberculosis is not common; primary or secondary; most frequent in male adults. Tuberculous deposits found in cortical mass and pyramids; these break down and form large, yellow, cheesy masses. The uriniferous tubules, pelvis, and ureters become infected and ulcerate.

Symptoms.—They may be latent for a time, but, commonly, there is a dull pain in the loins, sharp and acute at intervals, due to obstruction of ureters by tuberculous products; kidney not enlarged. *Urine* contains pus, tubercular debris, blood, and albumin; may be ropy and ammoniacal. General symptoms are fever, high in evening, with morning remissions; loss of flesh and appetite; diarrhoea; and general symptoms of tuberculosis.

Prognosis.—Always fatal; uræmic attacks common.

Treatment.—*Palliative and Symptomatic.*—Open any suspected abscess. Nephrectomy is of little value, as both organs are usually affected.

RENAL CALCULI.

Synonyms.—Gravel; nephrolithiasis; kidney-stones.

Definition.—A calcareous or stone-like concretion, having its origin in the kidney, and giving rise to pyelitis by its local irritation; *renal colic* by its passage along the course of the ureter; or no symptoms, except a brick-dust deposit in the urine (*gravel*).

Etiology.—Most common among the poor; males; early and late life. The true cause of renal calculi is obscure.

Varieties.—1. *Uric-acid stone* is most common, and is oval, hard, smooth, or rough, reddish in color, and varies in size from a millet-seed to a pigeon's egg. May be single or multiple.

2. *Urates of soda or ammonium* form soft, small stones; most common in childhood.

3. *Calcium Oxalate.*—A mulberry-shaped calculus, rough, very hard, dark brown, and mostly single.

4. *Calcium Phosphate.*—Phosphatic stones are smooth, soft, friable, earthy, or chalky, and vary in size from a hemp-seed to a large hen's egg.

5. *Mixed calculi* contain various salts in alternate layers.

Other calculi, not commonly found, contain carbonate of calcium, xanthin, indigo, and other debris.

Symptoms.—A large renal calculus may remain in the pelvis of the kidney for a long time without symptoms. Later, there are lumbar pains, increased by jarring or motion; hæmaturia; pyuria and all symptoms of pyelitis, nephritis, or hydronephrosis. If the stones are very small, they are deposited in the urine and recognized by microscope. When a

large stone passes through the ureter, spasmodic contraction of its muscles ensues and causes *renal colic*.

Renal colic begins suddenly with violent pain, increasing in intensity, radiating along ureter to the testicle of the same side and to the head of the penis, the groin, thighs, and flanks; testicle of same side and the penis are retracted; intermissions last but a moment, and pain returns with greater severity. Thighs flexed on abdomen; patient rolls and screams with agony, and often faints; pulse quick and feeble; temperature slightly elevated; nausea and vomiting; frequent micturition; urine scanty and bloody. Attack lasts one hour to two days, and suddenly terminates when the stone reaches the bladder. Stone is passed with urine or remains in bladder and forms a nucleus for stone. The side is tender and sore to pressure, with a dull, burning pain along ureter, for several days following the attack. The stone may lodge in the ureter and cause obstruction, ulceration, peritonitis, and death.

Pathology.—*Urine* becomes concentrated or greatly loaded with salts, which crystallize about a nucleus of pus, mucus, epithelium, or blood, and form a stone. When the crystals do not form about a common nucleus it causes gravel.

Diagnosis.

RENAL COLIC.	HEPATIC COLIC.	INTESTINAL COLIC.
On either side.	Always on right side.	Over whole abdomen; umbilical.
Pain reflected to testicle, head of penis, with retraction; urinary symptoms.	Pain reflected to back, shoulder, and no urinary symptoms; slight jaundice.	Pain central over umbilicus; no urinary symptoms or jaundice.
Not relieved by pressure.	Not relieved by pressure.	Slight relief from pressure.
Passage of renal stone.	Passage of gall stone.	Passage of indigested food.

Prognosis.—Must be guarded, as many sequelæ or complications arise. Simple gravel is curable. Large stones cause

pyelitis, hydronephrosis, nephritis, obstruction of ureter, stone in bladder, uræmia, or death.

Treatment.—*Renal Colic.*—Hypodermic injection of morphina and atropina for pain; inhalations of chloroform, ether, or bromide of ethyl for anæsthetic effect; hot applications, posteriorly, along course of ureter. Antispasmodic and relaxing remedies, such as tartar emetic, morphina, and anæsthetics, favor passage of stone. Subsequent symptoms, tenderness and pain, are best relieved by hot applications, alkaline diuretics, and morphina.

Preventive.—Limit amount of nitrogenous food to prevent formation of uric acid; give milk, vegetables, and large amounts of alkaline, diuretic waters; extractum picchi fluidum alkalinizes urine, and is valuable; keep emunctories active; frequent baths and exercise. Phosphatic and oxalic calculi require ammonium benzoate or nitromuriatic acid and free diuresis. Impacted calculus necessitates surgical measures. The so-called *solvent remedies* prevent the stone from becoming larger (?), but *their solvent action is extremely doubtful*. Piperazine, gr. v–xv, daily, is the best remedy now known for calculi or gravel; a one or two percent. solution, injected into the bladder, may dissolve a calculus if long continued.

RENAL PARASITES.

The three principal classes of parasites that invade the urinary organs deserve mention, owing to the frequency with which they are met in certain countries.

(1) FILARIA SANGUINIS HOMINIS.

Description.—A filiform or thread-like worm, about three inches long; indigenous to the countries of China and India. It enters the lymph-channels and blood-vessels; affects different organs; causes elephantiasis of the scrotum, lymphangitis,

or *chyluria*. How *chyluria* is caused by this parasite is not positively explained. *Urine* is milky; white; fat collects on its surface; small amount of blood or albumin; and the *filaria* can often be detected with microscope. It may last for thirty years, with emaciation, great thirst, little fever, and an unnatural appetite.

Treatment.—Little can be done for it. *Preventive treatment* consists in using boiled water and thoroughly cooked foods. Thymol, gr. j., increased to gr. v, ter die, is said to have cured two typical cases.

(2) ECHINOCOCCUS HOMINIS.

Description.—*Hydatids of the kidney* are produced like *hydatids of the liver*, and vary in size. The only symptom present may be a tense tumor in the loin, that gives a peculiar thrill on percussion. Rupture of the cyst is common; renal colic from passage of small cysts, pyelitis, cystitis, or suppuration complicate. May last many years. *Prognosis* is not bad.

Treatment.—Aspirate cysts or perform nephrotomy. Treat symptoms.

(3) BILHARZIA HÆMATOBIA.

Description.—A fluke-like worm, varying in size from one half to three quarters of an inch in length; female is the larger; inhabits waters of Egypt, and is most common in those who bathe in the streams. Parasite invades mucous membrane of urethra, bladder, ureters, and pelvis of kidney. Hematuria, following passage of clear urine, is the leading symptom; pain in loins, and anemia. *Prognosis* is good.

Treatment.—Alkaline, diuretic waters; oil of turpentine and chloroform, internally; salol, gr. v, ter die. Washing out the bladder is of questionable value.

DISEASES OF THE BLADDER.

CYSTITIS.

Synonym.—Catarrh of the bladder.

Definition.—An acute or chronic inflammation of the mucous membrane of the bladder, accompanied by scanty, alkaline, ropy urine, hypogastric pain, slight fever, and tenesmus. *Varieties* are catarrhal, diphtheritic, and croupous.

Etiology.—*Acute.*—Unskillful or careless injections or catheterization with septic instruments; direct injuries or blows; cold; foreign bodies; calculi; retention or acidity of urine; new beer; extension of gonorrhœa or pyelitis; fevers; diphtheria; nervous disorders; and irritating medicines.

Chronic.—Comes from acute; enlarged prostate; stricture of urethra; stone in bladder; cancer; tuberculosis; tumors; kidney-diseases; old age; and Bright's disease.

Symptoms.—*Acute.*—Weight and pain in hypogastrium and perineum, increased by pressure, and radiates to back and groins; chills; loss of appetite; some fever; irritable bladder; vesical tenesmus; urine passed in small amount after great tenesmus; burning micturition. *Urine* is high-colored, cloudy, ropy, alkaline, and contains mucus, pus, epithelium, and blood-cells.

Chronic.—Most common in old men with enlarged prostate. Begins gradually with tenderness in the hypogastrium; frequent scanty micturition, with tenesmus; loss of appetite; gastro-intestinal catarrh; bad breath; general debility. Ulceration is indicated by severe burning pain, hæmaturia, pyuria, and hectic fever. *Urine* scanty, alkaline, contains

offensive muco-pus, and deposits crystals of the triple phosphates, pus, mucus, blood, and epithelial cells. When bladder becomes hypertrophied, a hard tumor is felt above the pubes: urine dribbles, and cannot be retained.

Pathology.—*Acute.*—Hyperæmia of mucous membrane, most marked in the vesical triangle; membrane red, swollen, and œdematous; increased glandular secretion; desquamated epithelium; small ulcers or erosions, covered with mucus and pus. Submucous abscesses form; sinuses. A diphtheritic membrane may exist.

Chronic.—Membrane is gray or bluish, thick, tough, and covered with a thick, decomposing, alkaline mucus and pus: *bacteria present*. Mucous membrane is ribbed, giving a columnar appearance; walls of bladder may be one-half to one inch thick. *Hypertrophy* is concentric or acentric. *Perforating abscesses* and sinuses.

Diagnosis.—*Neuralgia* has a sharp, lancinating pain, no fever or urinary symptoms, and lasts a few hours. *Uterine and vaginal troubles* diagnosed by examination. *Pyelitis* has lumbar pains, following ureters; acid urine and no vesical tenesmus.

Prognosis.—*Acute* cases usually recover. *Chronic* cases drag on for years, and when hypertrophy occurs they are incurable.

Treatment.—*Acute.*—*Remote cause.* When due to cold, diaphoretics, leeches, hot poultices or fomentations to perineum and hypogastrium, rectal injections of hot water, hot baths, and rest in bed. *Avoid* condiments, volatile oils, alcohol, salt, and acids. Alkaline waters in large quantities diminish irritability; camphor relieves catarrh of cantharides. Dover's powder, opium, belladonna, or Cannabis Indica relieve tenesmus. Salol, gr. v, ter die, benzoic acid, infusion of pareira or extractum picchi fluidum, gtt. x, in brandy, every two hours,

constitute valuable remedies. *Milk diet* is most suitable. Keep bowels open and treat symptoms.

Chronic.—*Empty bladder at regular intervals* with a smooth, soft, elastic catheter. *Absolute rest in bed*. Copaiba relieves secretion of mucus and pus temporarily, but does not cure, for, as soon as discontinued, the trouble returns. *Germicidal treatment is a failure, because antiseptic solutions cannot be used sufficiently strong* on account of their great irritation. Large quantities of alkaline waters internally. A peculiarity with these cases is the fact that all food tires them, and the only diet that seems to be acceptable is highly seasoned terrapin. After all, *the best remedy is washing out of the bladder*. Bichloride of mercury, sulphocarbolates, zinc sulphate, silver nitrate, and tannic acid are too irritating for injections. Creolin, one to two thousand, is recommended. One of the best and safest injections is one tablespoonful of hamamelis to a pint of warm water. *Injections should be given with a douche* (not a syringe), *without any force*. Discomfort during injections means that the solution is too hot or cold, too strong, or too much force. Wash through a two-way catheter until return-flow is clear; always allow some of the fluid to remain in bladder. Strengthen with iron and cod-liver oil. Salol and pichi do good in some cases.

HYPERÆSTHESIA OF THE BLADDER.

Description.—A neurosis, characterized by *constant desire to micturate*; *no lesion* to the bladder-walls. Due to acidity of urine; sexual excesses; increased solid constituents of urine; onanism; gonorrhœa; and masturbation. Flow of urine is weak, and causes *straining*; desire to urinate every fifteen minutes or more; *pain* reflected to glans penis. Often complicated by pruritis ani.

Treatment.—Cold douches to spine; salt-water baths; Turkish baths. Severe cases relieved by balsam copaiba, or, better still, compound tincture of benzoin, gtt. xv–xx, ter die. *Pruritis ani* relieved by penciling cutaneous margin of anus—not the mucous membrane—with benzoin. Alkalies for hyperacidity; oxide of zinc relieves hyperæsthesia of urethra. Break up habit of masturbation or excessive venereal excesses. Treat cause.

ANÆSTHESIA OF THE BLADDER.

Synonyms.—Nocturnal incontinence of urine; enuresis.

Description.—An inability to retain urine during sleep, most common in children. *Caused by* irritation of intestinal worms; kidney-disease; phimosis or adherent prepuce; constipation; uncleanness; excessive use of liquids before retiring; and dorsal position during sleep. If not checked, it ultimately leads to confirmed masturbation; hyperæsthesia of prostate; spermatorrhœa; hypochondria; insanity; neurasthenia; and, finally, locomotor ataxia. Urine constantly dribbles, and is voided during sleep. Privates are very irritable.

Treatment.—*Absolute cleanliness*; operate on congenital defects of privates; remove cause; *forbid drinking before retiring*; *make child get up during night and early morning to urinate*, and before retiring. Cause the child to *sleep on its side* by placing some substance on the back, such as a ball or book. Insist on out-door exercise in pure, fresh air; athletic sports; horseback riding; salt baths every morning; flannel next skin. If child is a masturbator, keep it employed and under *constant observation*. Iron is good in anæmia or worms. Erigeron, cantharides, or nux vomica overcome weakness of sphincters. Tincture of belladonna, bromides, and chloral may do good if pushed to point of tolerance. *Tr. gelsemii*, gtt. v, before re-

tiring, and small doses during the day, is claimed to be very valuable. Electricity, applied to sphincters, increases tone, and is a means of cure.

HÆMATURIA.

Description.—Blood in the urine is *symptomatic* of trouble in the urethra, prostate, bladder, ureters, or kidney; or *secondary* to some constitutional disorder. It is due to Bright's disease; active or passive renal congestion; renal calculi; abscess; ulcer; cancer; tuberculosis; entozoa; purpura; malaria; vicarious menstruation; use of irritant medicines.

Blood from kidneys is indicated by smoky urine, with casts of uriniferous tubules and symptoms of renal colic. *Blood from bladder follows the passage of urine, and is pure or clotted; may be mixed with urine. Hemorrhage from urethra is independent of micturition. Endemic hamaturia occurs in Brazil, Egypt, and Cape Colony from the parasite Bilharzia hamatobia.* (See page 282.)

Treatment.—*Causal.*—*In general*, rest in bed; cold applications; injections of ice-water into rectum; oil of erigeron, gtt. v, ter die; ergot; tannic acid; gallic acid; tr. ferri chloridi. Hemorrhage from these organs is rarely fatal, as the capacity of the bladder limits flow of blood. Maintain strength and treat on the general principle indicated by cause.

PARALYSIS OF THE BLADDER.

Description.—Paralysis of the bladder is due to cerebral disease (least common form); paralysis of the detrusor urinæ muscle; peripheral lesions; prolonged over-distention from retained urine; rarely found in typhus or typhoid fever. Complete paralysis of the sphincter causes dribbling. If the

sphincter and detrusor urinæ muscles are paralyzed, the bladder is always full, and urine constantly dribbles; hence the term *incontinence with retention*.

Treatment.—*Use catheter at regular intervals, three or four times a day. If there is prolonged retention, never remove all urine at once, but allow a small amount to escape at a time, so that the bladder-walls may be supported until they regain their muscular tone. Galvanism to bladder and involuntary sphincter. Strychnina in full doses, gr. $\frac{1}{30}$, ter die, increased to tolerance; cold baths. Paralysis of bladder sphincter alone is relieved by oil of erigeron. Treat cause.*

PHYSICAL DIAGNOSIS.

INTRODUCTION.

Physical Diagnosis.—A method of distinguishing, fixing, or interpreting a disease from symptoms which are recognized by our senses.

Differential Diagnosis.—“The qualitative distinguishing between two distinct diseases of similar character by comparative symptoms.” (Gould.)

Physical Signs.—The indications or results obtained by inspection, mensuration, palpation, percussion, auscultation, and succussion.

Topographical Anatomy.—The study of external landmarks or points which indicate or determine the comparative location of the various organs and parts of the body. Certain landmarks on the chest-walls are used as fixed points, and, from these, subdivisions are made for convenience in study and to avoid confusing terms. The clavicle, nipples, sternum, axilla, scapula, spinous processes of the vertebræ, and ribs constitute the fixed points, and all signs should be given with reference to them. To be accurate in this reference, it will be necessary for the patient to sit or stand erect with the parts in full view; or, if lying down, to assume a natural, comfortable position, so that none of the muscles of the parts may be brought into action and mask any important points.

INSPECTION.

Inspection of the chest means simply looking at it from all sides. The normal movements of the chest vary in the sexes. The *abdominal or inferior costal type of respiration* is characteristic of the male sex and children. Movement of the chest in its upper portions, *superior costal breathing*, is characteristic of the female. The chest should be full, round, and nearly symmetrical. *Respiratory movements* in health are between sixteen and twenty per minute, and regular in rhythm. By inspection we determine whether the chest is deformed; whether the intercostal spaces are sunken or bulging; whether there is supra- or infra-clavicular depression, retracted or expanded chest-walls. We also note any discoloration, tumors, apex-beat of the heart, or unilateral motion of the chest.

MENSURATION.

The *average normal circumference of the chest* above the nipples is thirty-three inches. The difference between forced inspiration and forced expiration (*expansion*) is about two inches in health. In comparing the two sides of the chest, mark the median line anteriorly and the spinous processes of the vertebræ posteriorly. The two sides vary according to a right or left-handed person. The side most used is larger, by one-half inch, than the other. *Accurate measurements* are taken when the breath is held between forced expiration and forced inspiration. Molding soft strips of lead to the side enables one to compare the chest from week to week and notice any retraction or expansion.

The *spirometer* is used to determine the capacity of the lungs, but there are so many sources of error in its use that it is *not an accurate means of diagnosis*.

PALPATION.

A method of examining the chest by the fingers or the hands. By it we learn of its movements, size, and form; points of tenderness or tumors; vocal fremitus, vibrations, and ronchi. *Fremitus* is a vibration of the chest-walls, most marked in those who have deep bass voices, consolidation, or roughened pleura. It is produced by crying, talking, coughing, or deep breathing. *Normal fremitus* is felt all over the chest, most marked at the right apex. Consolidation increases, pleural effusion diminishes, fremitus.

PERCUSSION.

The act of striking any portion of the body, with the object of learning pathological conditions by the resonance of the strokes. It is made by means of the fingers (*immediate percussion*), or by some instrument interposed, as a pleximeter (*mediate percussion*). Percussion is said to be *clear*, *tympanitic*, or *dull*; and differs in pitch, strength, and duration.

Clear sounds are produced over tissues that contain air—usually referred to the lungs—and indicate a normal condition.

Tympanitic sounds are those produced over the intestines or cavities containing a large amount of gas or air. These sounds have been likened to a *metallic or amphoric sound*, because they are produced in large cavities with tense walls; and the *cracked-metal* or *cracked-pot* sound in cavities connecting with a bronchial tube.

Dull sounds are elicited by percussion over liquids, solid matter, and such organs as the liver, spleen, or heart. Consolidated lung-tissue gives dullness and a sense of resistance to the finger used in percussing.

Respiratory percussion is practiced during forced inspiration and expiration, and is of value in detecting any points that might be overlooked in ordinary percussion.

AUSCULTATION.

A process of listening to the sounds produced in the various organs, with a view of comparing or harmonizing them with the symptoms obtained by other methods, and thus arrive at a more accurate diagnosis. *Immediate auscultation* is practiced by placing the ear directly in contact with the skin over the organ. *Mediate auscultation* is the intervention of some substance between the ear and parts—most commonly a stethoscope. *Never practice auscultation with the head too low; in uncomfortable positions; through thick clothing; nor under conditions of noise or personal excitement.* It reveals to us the sounds of respiration; the voice; coughing; healthy and unhealthy conditions.

Tubular or bronchial breathing is a sound similar to that produced by blowing through a tube, and is present in the trachea and large bronchi, both on inspiration and expiration.

Vesicular murmur is heard over the lungs, marked on inspiration, less distinct on expiration. It is soft, low in pitch, and caused by the expansion and contraction of the air-vesicles, cells, and small bronchi. It differs in different parts of the lungs, and is affected by disease. Vesicular murmur may be increased in duration and intensity (*puerile respiration*): may be very feeble, from obstruction of tubes, debility, mechanical pressure, intervention of fluids, or consolidations; may be absent, from complete obliteration or obstruction of air-vesicles or bronchial tubes, or the presence of large amounts of fluid. *Jerking inspiration* is due to the neurotic element in tuberculosis and hysteria.

Bronchial respiration alone is indicative of consolidation from infiltration, effusions, or new growths, and is tubular in character.

Cavernous respiration is a blowing, hollow sound : low pitch ; circumscribed ; gurgling ; and indicative of cavities or dilated, large bronchi.

Amphoric respiration is caused by a cavity with thick, tense walls, and produces a metallic sound like that of blowing into an empty bottle.

Cheyne-Stokes Respiration.—"A phenomenon observed in a form of dyspnoea, in which there is a rhythmical increase of the respirations up to a certain degree of rapidity, then gradually decreasing again to a temporary cessation." (Gould.)

Râle.—A rattling sound produced by the passage of air through obstructions of the bronchi and lungs, either *moist* or *dry* in character. It occurs during expiration, inspiration, or both.

Moist râles are produced by air passing through liquids in the bronchi or lungs, and cause a bubbling sound.

Dry râles are the result of air passing through tough, tenacious exudation or a partial obstruction to the caliber of the bronchi or lungs.

Cavernous râles are heard over cavities containing liquid, and are caused by a bubbling of air through it. Present in last stages of phthisis pulmonalis.

Crepitant or Vesicular Râles.—Fine, crackling sounds, similar to that caused by rolling hair between the fingers, and heard at the end of expiration. Present in the first stages of pneumonia and incipient phthisis.

Mucous Râles.—Bubbling sounds caused in the bronchial tubes by air passing through mucus.

Sibilant râles are sharp, hissing, whistling sounds heard in narrowing of the small bronchi.

Sonorous râles are harsh, snoring-like, low-pitched sounds due to narrowing of the large bronchi.

Tracheal or subcrepitant râles are made by air passing through an accumulation of mucus in the trachea, and often termed *the death-rattle*.

Friction-sounds arise from rubbing together of the roughened surfaces of the pleura on inspiration and expiration, and are dry or moist. Heard in pleurisy.

THE VOICE.

The voice varies under conditions of health and disease, and can be heard as the vocal resonance; more marked on the right side of the chest.

Bronchophony.—The resonance of the voice as heard in the bronchi (concentrated near the ear), indicative of consolidation of pneumonia and phthisis.

Pectoriloquy.—A peculiar resonance of the voice over a cavity or complete consolidation, by which every articulate word can be distinctly recognized.

Egophony.—A tremulousness of the voice similar to the sound made by a bleating goat (a nasal-like twang), indicative of pleural effusion or pleuro-pneumonia.

Vocal resonance may be diminished, increased, or absent. When the patient whispers, similar changes are noticed as in spoken voice.

SUCCUSSION.

A process of shaking or lightly striking the chest-wall with the purpose of eliciting a splashing sound or wave, which is best heard when the ear is placed against the chest, and indicates the presence of fluid in the pleural cavity. Present in hydrothorax or pneumo-hydrothorax.

DISEASES OF THE NOSE.

ACUTE RHINITIS.

Synonyms.—Acute nasal catarrh; cold in the head; acute coryza.

Definition.—An acute inflammation of the Schneiderian mucous membrane, extending by continuity of structure to the lachrymal duct, conjunctiva, pharynx, and other cavities with which it is connected.

Etiology.—Exposure to cold; irritating vapors; chemical fumes or dust; epidemic; predisposition. Complicates and is symptomatic of measles, syphilis, and influenza. Follows the excessive use of potassium iodide.

Symptoms.—*Begins* with repeated sneezing, chilliness, and, in children, some fever. *Nose is dry*, “stuffed up,” and articulation impaired; mucous membrane red and swollen; nasal breathing impaired; sense of taste and smell diminished or lost temporarily. Very soon a profuse, watery, salty, thin fluid begins to flow from the nose and excoriates the upper lip and anterior nares. Headache, dull and severe, when frontal sinuses are involved; dull, heavy feeling; eyes suffused with tears, from extension of inflammation through the lachrymal duct; hearing dull, from extension or closure of Eustachian tube. Catarrh may leave suddenly or the discharge will assume a muco-purulent character and acute symptoms subside gradually. Severe cases involve the pharynx, larynx, and lungs, giving a “naso-pharyngo-laryngo-broncho-pulmonary catarrh.”

Prognosis.—*Mild cases* recover in two days to one week.

Severe cases may run for weeks and terminate in chronic nasal catarrh; or, by extension, diseases of the ear, lachrymal apparatus, pharynx, bronchial tubes, lungs, mastoid cells, antrum, or frontal sinuses.

Treatment.—*Preventive.*—Avoid all causes. When it is necessary to work in dust or irritating vapors, wear a wet sponge-respirator. Harden the body by cold sponging, and avoid any influence that would tend to debilitate or increase susceptibility to cold.

Acute Attack.—If seen early, give pulvis ipecacuanhæ et opii, gr. v-x, at bedtime, with a hot drink to promote free diaphoresis; or a hot Turkish bath, followed by rest in a warm room. One drop of tr. aconiti or tr. veratri, every hour, until the physiological effects are obtained; tr. belladonnæ or atropinæ sulphas will check excessive secretion; quinine is recommended by some, but is not sufficiently active to abort acute attacks.

Local applications of very dilute acidum carbolicum and sodii chloridum by means of a spray or douche; unguentum petrolii used freely; menthol inhalations; powders of bismuthi salicylas with morphinæ sulphas; sprays of hydrogen peroxide (one to eight of water); four-percent. solution of cocainæ hydrochloras relieves sneezing and congestion temporarily.

Symptomatic catarrh must be treated according to cause. "Sniffles" in new-born children usually indicates syphilitic infection, and demands specific treatment and mild errhines. Arsenic in small doses is said to relieve prolonged attacks when other remedies fail.

CHRONIC RHINITIS.

Synonyms.—Chronic nasal catarrh; chronic coryza.

Definition.—A chronic inflammation of the Schneiderian

mucous membrane, presenting itself in the form of a *dry* or *moist* catarrh.

Etiology.—A sequel of acute rhinitis; syphilis; tuberculosis; constant irritation.

Symptoms.—*Dry Rhinitis.*—Characterized by a dry, burning feeling and fullness in the nose and frontal sinuses; obstructed nasal breathing; little discharge, except occasional dry scabs, tough mucus, or blood; epistaxis; nasal voice; impaired or destroyed sense of smell; ulcerated patches; slight cough; and desire to clear the nose. Acute exacerbations are common. It is the most common cause of lachrymal obstruction.

Moist Rhinitis.—Characterized by a free flow of mucus, greenish or yellow muco-pus, which is either blown from the anterior or drawn through the posterior nares, hawked, and expectorated. Constant desire to hawk and clear the throat caused by the secretions dripping from the posterior nares; obstructed breathing; breath offensive at times, more marked in the morning; impaired sense of smell and taste; occasional epistaxis.

Ozena, sometimes termed chronic rhinitis (?), is a condition where the mucous and submucous tissues are thickened and ulcerated; the turbinated bones necrosed, and at times exposed. *Odor is fetid*, penetrating, and so offensive that it is noticed several feet from the patient. Discharge is thin, contains bloody mucus or muco-pus, and is very offensive.

Pathology.—Mucous membrane is hypertrophied, infiltrated, dark red or grayish, and swollen; scabs of dry, inspissated mucus, serum, and pus; an increased glandular secretion in the moist, decreased in the dry, form; small ulcers at times, that may leave the bone exposed and cause necrosis; veins enlarged and dilated. Occasional occlusion of nares by polypi. The tissues, being of an erectile structure, cause temporary occlusion of nares under slight irritation.

Septum may be perforated. Catarrh extends to the lachrymal duct, causing stricture and epiphora. Pathology of ozena is not definitely settled.

Prognosis.—*Perfect cures are rare.* Long, persistent treatment, change of climate and occupation may result in temporary or, possibly, permanent cure.

Treatment.—*Constitutional.*—Treat all diatheses and give tonics. Strychnine arsenias, gr. $\frac{1}{100}$, ter die. Alteratives, potassium iodide and mercury, increased to tolerance, promote absorption of hypertrophic tissues.

Local.—It is impossible to make thorough applications to the entire tortuous Schneiderian mucous membrane; hence the inefficiency of nasal douches and insufflations, which only reach the inferior, middle, and part of the superior meatus. *Cleanliness is the main principle.* To accomplish this, use weak solutions of sodii chloridum or sodii bicarbonas, with a douche, post-nasal spray, or, better still, snuffing it from the palm of the hand. A valuable application or spray is hydrogen peroxide or tr. iodini comp. (see *Pharyngitis*). This can be followed by powders of aristol, iodoform, bismuthi salicylas, or morphina. *Local applications* to ulcers, such as dilute acidum nitricum, zinci chloridum, or argenti nitras.

Elastic nasal tubes are now worn to promote absorption of hypertrophic tissues; galvano-cautery or surgical measures are used to remove hypertrophied, turbinated bones.

HAY-FEVER.

Description.—A disease (?) or peculiar hyperæsthetic condition (neurotic?) of the Schneiderian and bronchial mucous membranes, characterized by yearly attacks, which come during the season when the air is laden with pollen of grains, grasses, and certain flowers. *Begins suddenly* with constant

sneezing; free flow of a clear mucus from the nose; congestion of eyes and nasal mucous membrane; obstruction to nasal breathing; secretions become thick, purulent, or bloody. Catarrh may extend to larynx and bronchi, with coughing and asthmatic attacks. Lasts from one day to several weeks; leaves patient weak and miserable. Is most common in males, after puberty, and in those who live in cities. Often *complicated* by bronchitis, œdema of the lungs, or pneumonia. Such terms as summer catarrh, rose-cold, and rose-fever are applied to it.

Treatment.—*Very unsatisfactory.* Change of climate to sea-shore or mountains; remain indoors during the middle hours of the day; avoid passing or coming in contact with any of the pollen-bearing cereals or flowers. *Free inhalations from a menthol inhaler* or menthol spray greatly mitigate attacks of sneezing and irritation. Ammonia; cocaine, four-percent. solution; carbolic acid, and tr. benzoini comp., locally, afford partial relief. Atropina is indicated by profuse watery discharge. Remove hypertrophied turbinated bones and mucous membrane by galvano-cautery or other surgical means. Quinina; phenacetin; acetanilide; potassii iodidum; arsenic; and antispasmodics constitute *internal medication*, but do little good. Treat bronchial catarrh and asthma as indicated under those diseases.

DISEASES OF THE LARYNX.

ACUTE CATARRHAL LARYNGITIS.

Definition.—An acute catarrhal inflammation of the laryngeal mucous membrane, accompanied by sore throat, painful deglutition, dry, hacking cough; and impaired function of speech.

Etiology.—Exposure to cold; inhalation of irritating vapors and chemical fumes; prolonged use of the voice in speaking or singing; direct injury; predisposition. Symptomatic of measles.

Symptoms.—*Begins with chill, rigors, and some fever; or comes on gradually with a dry, burning, tickling sensation in the larynx; constant desire to cough and clear the throat; hoarseness, that gradually increases until patient cannot articulate (aphonia); slight pain on deglutition; some fever and dyspnœa in severe cases. Cough is first dry and harsh, but soon becomes loose—and plugs of mucus, streaked with blood, are coughed up—then muco-purulent, and gradually subsides or becomes chronic.*

Pathology.—Mucous membrane covering the larynx and vocal cords red, congested, and, in places, small abraded patches, with slight hemorrhage. Vocal bands do not approximate properly, hence the loss of voice. Secretion is first thick and tenacious, but soon changes to a muco-purulent character, and is more easily expectorated.

Prognosis.—Does not result fatally; may become chronic; lasts from a few days to three weeks.

Treatment.—*Preventive.*—Harden patient by cold baths; cold sponge-baths, followed by free friction. *Avoid* hot baths, close confinement, sudden changes of clothing or temperature, or anything that would tend to effeminacy.

Onset.—Give tr. aconiti or tr. veratri in full doses, every half-hour, until fever is broken. Hydrargyri chloridum mite, gr. $\frac{1}{10}$, every hour, until it opens bowels freely. Keep patient in a moist air at a uniform temperature. Inhalations of medicated steam (tr. benzoini comp., carbolic acid, or oleum eucalyptol). Limit amount of fluid taken. Pulvis ipecacuanhæ et opii, gr. i–ij, every hour, until cough is broken or soothed. Apply cold or hot compresses over the throat. Small doses of codeina will soothe cough. When acute stage is passed, give small doses of antimonii et potassii tart., gr. $\frac{1}{2}$, syr. ipecacuanhæ, or syr. scillæ.

Rx

Antimonii et potassii tart..... gr. j.

Potassii bromidi..... 3 jss.

Syr. aurantii floratis..... f 3 j.

Liq. ammonii acetatis..... q. s. ad. f 3 iij.

M. Signa. One teaspoonful every two or three hours.

ŒDEMA OF THE GLOTTIS.

Description.—An inflammation of the mucous membrane of the glottis and larynx, accompanied by an infiltration of serum into the loose areolar tissue, causing œdema. *Occurs in young adults* from exposure to cold, septic fevers, Bright's disease, syphilis, and tuberculosis. Begins in a few hours with hoarseness; dry cough and marked dyspnoea; pain in the throat; sense of fullness; difficult and painful deglutition.

The swollen epiglottis often projects above the base of the tongue, or can be felt with the finger. Fatal dyspnoea may occur if not properly managed.

Prognosis.—Many cases recover, but it is a serious disease.

Treatment.—Scarify the swollen epiglottis freely and frequently: this will fulfill every indication. Tracheotomy may be indicated. Tr. aconiti for fever; brisk, drastic cathartics; and free diaphoresis with pilocarpine and hot drinks. Limit as far as possible the amount of water taken; leeches to the neck. Emetics are indicated by râles in the chest. Attend to all constitutional disturbances, and treat all symptoms as indicated.

CHRONIC CATARRHAL LARYNGITIS.

Description.—A chronic inflammation of the laryngeal mucous membrane, due to repeated acute attacks; excessive or improper use of the voice; smoking; alcohol; syphilis; all irritating chemical fumes; and dust. Voice is hoarse; dryness and tickling sensation in the throat, with a desire to cough or clear it, especially before beginning to speak. May not cause any trouble for several days, and then be aggravated by slight cause. Acute exacerbations are frequent. Laryngoscopic examination shows a congested mucous membrane, covered by tenacious mucus; swelling and thickening at times; small ulcers or erosions; improper approximation of vocal bands in phonation.

Treatment.—*Constitutional.*—Build up the patient with tonics and good food; abstain from smoking and drinking; and use the voice as little as possible. *Avoid* every cause. Alteratives may be indicated. Strychninae arsenias, gr. $\frac{1}{100}$, ter die.

Local.—Inhalations of medicated steam to remove tenacious

mucus. Apply, with a laryngeal spray or brush, solutions of zinci chloridum, gr. xx-xxx to the $\frac{3}{4}$ j of water; hydrogen peroxide; alum; zinci sulphas, gr. x-f $\frac{3}{4}$ j; glycerol of tannin. Topical applications of iodoform, aristol, or pyoctanin are recommended. *Treat ulcers* by direct application of caustics. Electricity aids in restoration of muscular tone. Small doses of ammonii murias and codeina will relieve the obstinate tickling and tendency to cough.

TUBERCULAR LARYNGITIS.

Description.—Tubercular laryngitis, or laryngeal phthisis, is secondary to general tuberculosis, and rarely primary. Most common in males and rarely found in childhood. *Voice* becomes weak, hoarse, and is finally lost; *pain* on every attempt at swallowing or speaking; a weak cough. Late in the disease, food enters the larynx and trachea, causing *violent paroxysms of coughing*; food cannot be swallowed, owing to paralysis of the pharyngeal muscles. *Laryngoscope* shows tuberculous infiltration around the vocal cords; ulcers, which are limited or involve the whole cord; small tubercles.

Constitutional symptoms are usually present, such as fever; dullness at apex of one or both lungs; loss of flesh; night-sweats; tuberculous family history; and presence of the *Bacillus tuberculosis* in the sputum. Usually *terminates fatally* in six months or three years.

Treatment.—It is very doubtful if any remedy has ever cured a case of true laryngeal phthisis. What Koch's lymph will do remains for future investigation. (See p. 97.) In addition to the constitutional treatment outlined under tuberculosis (p. 96), *local measures are indispensable*. There are *four stages of topical treatment*:

1. *Cleanse the laryngeal mucous membrane* with a four-per-

cent. solution of sodii bicarbonas or biboras with an atomizer or laryngeal tube.

2. Apply a three or four grain solution of cocainæ hydrochloras with an atomizer to *allay irritation and sensitiveness*.

3. *Apply*, with laryngeal brush or atomizer, *a solution of argenti nitras*, gr. ij, or *zinci sulphas*, gr. i-v.

4. *Freely cover the larynx with an insufflation of iodoform or aristol*; or *apply iodoform and ether*.

Feed through the rectum, or through an œsophageal tube, when they cannot swallow nourishment.

LARYNGISMUS STRIDULUS.

Synonyms.—Spasm of the glottis; spasmodic croup; laryngospasm; “kinks.”

Definition.—A sudden spasmodic contraction of the laryngeal muscles, closure of the glottis, and a temporary attack of dyspnoea or apnoea.

Etiology.—*Neurotic in origin.* Hereditary; worms; teething; and all debilitating diseases. A prominent cause in older children is bad temper. Most common in the first and second years.

Symptoms.—*Begins suddenly* with a cessation of breathing; blueness and cyanotic condition of the skin; superficial veins enlarged and stand out; lasts from one to several minutes, when the spasm relaxes; *a crowing, stridulous respiration*; a long breath, and the child falls back exhausted, or breaks into violent crying or screams. *No after-effects.* Child soon resumes its play. No cough, fever, or hoarseness precede or follow an attack. May have spasms of the muscles of the arms or legs; convulsions. Relapses are frequent, and may have several spells in course of a day.

Diagnosis.—See table, *Membranous Croup*.

Prognosis.—Children rarely die from it unless it be from convulsions.

Treatment.—*Preventive.*—Avoid every possible source of irritation. Treat all gastro-intestinal disturbances and troubles of teething. Insist on flannel next the skin; good, fresh air; most nutritious diet; and tonics suitable for children of that age. If a spasm is anticipated, give a mustard foot-bath and cold to the head, or a few whiffs of chloroform, ether, or nitrite of amyl. Full doses of the bromides and chloral prevent attacks or recurrence.

Paroxysm.—This is usually over by the time the physician arrives. At once immerse the body to the neck in hot water, and apply cold to the head. A few whiffs of an anæsthetic will relax the spasm, if respiration is not absolutely checked. Follow at once with the bromides and chloral. Lac asafœtidæ, gtt. v-x, or musk, gr. $\frac{1}{4}$, every two hours, prevents recurrence.

In older children, “kinks” come from anger, and the most effectual cures consist in the administration of such harsh measures as a sound spanking, or douching the head with a bucket of cold water. Medication is rarely required.

CATARRHAL CROUP.

Synonyms.—Spasmodic croup; false croup; “child-crowing.”

Definition.—A catarrhal inflammation of the laryngeal mucous membrane, without any false membrane; accompanied by spasmodic contraction of the laryngeal muscles, causing threatened suffocation.

Etiology.—Occurs during the first three years of life, but may come later; hereditary; exposure to cold; enlarged tonsils; acute laryngitis.

Symptoms.—*Prodromal.*—Child is usually restless; uneasy; feverish; has a slight cough; breathes rather heavily, with a harsh sound. All symptoms may be absent until the onset, which comes suddenly.

Onset.—Child awakens from sleep with a *harsh, metallic, ringing cough*; great difficulty in breathing; head thrown back; grasps at its throat; skin darkened or cyanosed; superficial veins prominent; noisy, harsh breathing, or *peculiar crowing inspiration*. Symptoms gradually pass away, and child falls to sleep. Next day there is a slight cough. Paroxysm will probably return next night or even during the same night. The analogy between true and false croup is so close that the latter may run into the former.

Pathology.—Same as acute laryngitis, with the addition of spasmodic contraction of the laryngeal muscles. Not fully understood.

Diagnosis.—See table, *Membranous Croup*.

Prognosis.—Favorable. Death is rare. May be complicated by bronchitis or pneumonia.

Treatment.—*Prophylactic.*—Exposure, the most common cause, must be avoided; wear flannel next the skin the year round; attend to every possible cause, and never allow any catarrhal trouble to be overlooked or remain untreated. Small doses of antimonii et potassii tart., or syr. ipecacuanhæ with potassii bromidum, every two to four hours, often abort. Stimulate the emunctories. A *tonic, abortive treatment* is pursued by some, and consists in the administration of *quinina bisulphas*, gr. ij, every hour, until cough and symptoms subside.

Paroxysm.—A few inhalations of chloroform, iodide of ethyl, or amyl nitrite will relax spasmodic contraction of the laryngeal muscles. A hot bath, with cold compresses to the throat. Emetics of syr. ipecacuanhæ, apomorphine, alum,

and mustard are recommended, but must be cautiously used on account of their depressing effects. Inhalations of medicated steam. Follow with tonic treatment.

MEMBRANOUS CROUP.

Synonyms.—(Croupous, membranous, or pseudo-membranous laryngitis; true croup: laryngeal diphtheria.

Definition.—An acute, specific inflammation of the laryngeal and superior tracheal mucous membranes, accompanied by a fibro-plastic exudation or false membrane; constant fever; great dyspnœa; and usually terminating in death.

Etiology.—A disease of childhood between the second and seventh years. The great similarity between *true* membranous croup and diphtheria, and the fact that the former is most common during epidemics of the latter, have led some authors to claim that it is due to a specific microbe similar to or identical with that of diphtheria. Predisposing causes are improper hygiene, exposure to cold, debility, heredity; contagion doubtful.

Symptoms.—*Gradual in onset.* Child is cross, fretful, slightly feverish; has a hoarse cough; anorexia; disturbed sleep; and thirst. Cough becomes ringing; attacks of dyspnœa; voice husky; stridulous breathing; fever increased; tongue coated; white spots on the tonsils or fauces. Paroxysms of marked dyspnœa, followed by a period of calm and repose. On the second or third day, dyspnœa is marked and the least excitement causes frequent severe paroxysms; cyanosis. Child grasps its throat; head is thrown back; retraction of epigastrium; pieces of membrane may be coughed or vomited; pulse weak; eyes sunken and staring; cold extremities; gradual coma; and *death* from asphyxia, carbonic-acid

poisoning, *complications* of pneumonia or bronchitis, on the sixth or seventh day.

Favorable cases are indicated by a gradual amelioration of symptoms; coughing up pieces of the membrane; gradual return of voice; lessening of fever; and slow convalescence. Usually followed by bronchitis and temporary paralysis of the vocal cords.

Pathology.—An irritant, possibly a germ, causes congestion of the laryngeal and superior tracheal mucous membranes; transudation of serum; proliferation of cells; and diapedesis of leucocytes, which gradually elongate and form fibrous cells and tissue known as false membrane. This covers and occludes the larynx and superior part of the trachea, and at times extends to the bronchi. When removed, small bleeding points are left. Parts are swollen and red. Lungs often present a condition of pneumonia, emphysema, or bronchitis, from the *capping-glass action* exerted by forced efforts at inspiration. Kidney, liver, spleen, and brain are congested. Blood is thick and dark in color.

Diagnosis.

LARYNGISMUS STRIDULUS.	CATARRHAL CROUP.	MEMBRANOUS CROUP.
First and second years.	Second or third year.	Second to seventh year.
Sudden onset at night; no prodromes.	Sudden onset at night; catarrhal prodromes.	Onset gradual; long prodromes.
Duration, a few minutes.	One to three days.	Duration, four to six days.
No fever.	Slight fever in attack.	Constant high fever.
No expectoration.	Mucous expectoration.	Expectoration of false membrane.
Croupal breathing in attack.	Croupal breathing in attack.	Constantly increasing croupal breathing.
Usually no sequel.	Slight bronchitis.	Bronchitis; pneumonia; emphysema.
Death rare.	Death rare.	Most cases die.

Prognosis.—Few cases of true membranous croup recover. Catarrhal or false croup is too often mistaken for true croup; hence the unreliability of data at our command.

Treatment.—Whether the disease be of diphtheritic origin or not, the accepted treatment for either answers, and is the same as that used in the other.

Onset.—Put the child in bed between blankets; insist on *absolute quietness*; keep the room at a *uniform temperature* and the *air constantly moist with steam*. Quininae bisulphas, gr. ij, every two or three hours, with hydrargyri chloridum corrosivum, gr. $\frac{1}{60}$ to $\frac{1}{30}$ (some prefer the use of hydrargyri chloridum mite). Inhalations of medicated steam (oleum eucalyptol and tr. iodini comp.) every few minutes or continuously; constant hot or cold compresses to the throat. If paroxysms are frequent and child very restless, small doses of pulvis opii or pulvis opii et ipecacuanhae *during the first stage only*. Full doses of pilocarpine are said to abort, but sufficient statistics cannot be obtained to speak positively.

Second Stage.—Continue inhalations of steam; administer quininae and hydrargyrum. Solvents for the false membrane are of little value. Sprays of lactic acid, peroxide of hydrogen, and sodii bicarbonas are recommended. Better still, use a spray of the free chlorine mixture; or potassii chloras, myrrha, and acidum carbolicum (see *Pharyngitis*). Failing in this, tracheotomy or intubation becomes necessary. See that the tube is always kept clear, and accomplish this by a small brush or feather. Sustain strength by most nutritious diet and tonics. Aconite, aqua calcis, bromides, and emetics are all too depressing and of doubtful utility. *Emetics*, remedies which have been greatly abused, have their place, but why use them on every occasion? They only sap the little patients of that much strength and vitality that will be needed to tide them over the later stages. Only when

there is a large mass of flapping, loose membrane is one justified in giving an emetic, and even then its utility is doubtful.

Third Stage.—When recovery is imminent, the patient must be sustained and supported by tonics and best diet. Always watch the condition of the heart and let it be the guide; remove intubation-tube as soon as it can safely be dispensed with; prevent exposure; treat all complications and sequelæ.

DISEASES OF THE BRONCHIAL TUBES AND LUNGS.

BRONCHITIS.

Definition.—An inflammation of the bronchial mucous membrane, accompanied by fever; cough; substernal tenderness, or pain and oppression.

Varieties.—Acute bronchitis; plastic bronchitis; chronic bronchitis.

(1) ACUTE BRONCHITIS.

Synonyms.—Acute catarrhal bronchitis; cold on the chest; acute bronchial catarrh.

Definition.—An acute inflammation of the mucous membrane of the larger bronchial tubes, not attended with a plastic exudation.

Etiology.—Exposure to cold, irritating dust, or vapors; predisposition. Most common in children. *Symptomatic* of measles and typhoid fever.

Symptoms.—*Onset* is sudden, with a chill, fever, quick pulse, and general malaise; or gradual, with nasal and pharyngeal catarrh, coated tongue, headache, constipation, and slight cough. At first the cough is dry, harsh, and paroxysmal; slight expectoration of mucus, streaked with blood at times. *Pain* behind the sternum, increased by coughing or deep inspiration. *Cough* soon changes to a loose, free, mucopurulent or greenish expectoration, with no blood; fever sub-

sides; *percussion note* usually normal; harsh, vesiculo-bronchial breathing; sibilant or sonorous râles in first stage; moist and bubbling râles in second stage.

Pathology.—Hyperæmia of mucous membrane of larger bronchial tubes, due to an irritant; membrane is red, swollen, and dry; vessels congested; diapedesis and cell-proliferation. Secretion gradually increases, at first mucous, then muco-purulent, with desquamation of epithelial cells and, at times, rupture of capillaries. Bronchial glands enlarged, especially in the symptomatic form.

Prognosis.—Terminates favorably, and is not serious unless complicated by capillary bronchitis or pneumonia.

Treatment.—*Abortive.*—Quinina, and aconite or veratrum viride, in full doses every hour, until physiological effects are obtained. Acetanilide, phenacetin, and the other coal-tar series, are recommended by some, but are very depressing to the heart. Pulvis ipecacuanhæ et opii, gr. x-xv, or extractum jaborandi fluidum, gtt. xx-xl; hot mustard foot-bath; rest in bed and free diaphoresis. Hot drinks favor diaphoresis. During the first stage, when the cough is dry and irritating, and some fever, the following is very good:

R

Antimonii et potassii tart.	gr. j.
Tr. aconiti vel tr. veratri	f 3 ss.
Potassii bromidi (morphinæ sulph., gr. j) . . .	5 ijss.
Liquoris ammonii acetatis	f 3 ijss.
Syr. aurantii floratis	q. s. ad. f 3 iv.

M. Signa. One teaspoonful every two or three hours. For an adult.

Syr. scillæ, syr. ipecacuanhæ, liquor potassii citratis, are all good. It is always well to precede all medication with a free purge of hydrargyri chloridum mite. Inhalations of

moist steam; light, nutritious diet; and limit the amount of fluids taken.

Locally.—Mustard; hot liniments; poultices; blisters; or soft, raw cotton to the chest in severe cases.

Second stage indicates stimulating expectorants, and none is better than ammonii chloridum, gr. iii–x, in mistura glycyrrhizæ comp., every three or four hours. May be necessary to use cod-liver oil and stimulants in cachectic persons. Glyceritum hypophosphitum comp., f ʒ j, every four hours, is good.

(2) PLASTIC BRONCHITIS.

Synonyms.—Membranous bronchitis; croupous bronchitis; diphtheroid bronchitis.

Description.—An acute inflammation of the bronchial mucous membrane, accompanied by a fibro-plastic exudation, forming a distinct membranous cast of the large and small tubes. *Symptoms* are identical with acute catarrhal bronchitis, with the addition of marked dyspnoea; violent paroxysms of coughing; and expectoration of distinct membranous casts of the tubes, not unlike small pieces of vermicelli.

Pathology.—Similar to acute catarrhal bronchitis, except that the exudation, diapedesis, and proliferation of cells are of a fibro-plastic character, and probably depend upon a distinct germ analogous to or identical with that of membranous croup and diphtheria.

Prognosis.—Usually fatal in young children; healthy, strong adults recover.

Treatment.—Follow the same line of treatment indicated in acute catarrhal bronchitis. Administer hydrargyri chloridum corros., gr. $\frac{1}{60}$, every three or four hours; watch the heart; stimulate freely in late stages; best nourishing, easily

digested food; free inhalations of medicated steam. Emetics are usually of little value and too depressing.

(3) CHRONIC BRONCHITIS.

Synonyms.—Chronic bronchial catarrh; “winter cough.”

Definition.—A chronic inflammation of the mucous membrane of the larger bronchial tubes, recognized by the presence of a slight cough, more severe in winter (sometimes absent in summer); expectoration, slight or profuse; slight bronchial râles; no fever; and presenting itself in the form of a dry catarrh; moist catarrh; fetid catarrh or bronchorrhœa.

Etiology.—May be *primary* or *secondary*. Due to cold, exposure, great changes of temperature, all irritating vapors and dust, repeated acute attacks, extension from other parts, gout, rheumatism, tubercular and other diatheses, syphilis, alcoholism, heart-diseases. Also symptomatic and a sequela of certain fevers. Common in the aged or in children.

Symptoms.—*General.*—Chronic bronchitis of all varieties is accompanied by a cough that manifests itself more particularly during the damp, cold months of the year, and in mild, early cases disappears in summer. *Cough* worst in the morning and at night; *fever always absent*; loss of flesh, slight and scarcely perceptible at first; acute attacks common. *Percussion* sounds clear, unless emphysema complicates. *Auscultation* reveals all kinds of râles, depending on the variety. (See *Auscultation*, p. 292.)

Dry catarrh (bronchitis sicca) has little or no secretion; a harsh, violent, unsatisfactory, paroxysmal cough; small globules of tough mucus expectorated occasionally; dyspnoea; and substernal pain or soreness. Emphysema usually present.

Moist Catarrh.—Paroxysmal cough; expectoration of frothy

mucus, muco-purulent, white, yellow, or green in tinge; most annoying at night and in the morning during winter months.

Fetid Catarrh.—Expectoration very offensive; breath bad; and always associated with bronchial dilatation.

Bronchorrhœa.—Expectoration thin, ropy, or thick; contains little air; often fetid; may expectorate five pints in twenty-four hours. Common in old persons with bronchial dilatation.

Complications.—Emphysema; bronchial dilatation; heart-disease; or phthisis.

Pathology.—Same as acute bronchitis, except that the course is slower. Mucous membrane gray, thickened, and infiltrated. Emphysema is due to over-distention and sprain of the alveoli in coughing. Bronchial dilatation (*bronchiectasis*) comes from a loss of tone to the bronchial muscular fibers, from continued inflammation. Fetid sputum is caused by decomposition in the dilated bronchi before it can be expelled.

Diagnosis.—See table, page 95.

Prognosis.—Good, when taken early in its course. Old cases promise little as to cure, but are liable to be carried off by some complication or intercurrent affection. Predisposition to return, to acute attacks, and to phthisis.

Treatment.—*Hygienic and Climatic*.—Patient should live in a high, dry, uniform climate (providing heart-disease is absent) of uniform temperature, and avoid all exposure both to damp and cold. Light flannel must be worn next the skin; personal cleanliness; nutritious diet; pure, sweet cream and nitrogenous foods; and plenty of out-door exercise, within the limit of endurance. Living in the balmy air of pine-forests of New Jersey and the Southern States, or the high, dry climate of Colorado, New Mexico, and Arizona, is conducive to rapid recovery. Regular, systematic hours for sleep, exercise, and duty, combined with good hygienic measures and an

out-door life, will accomplish better results than medicines given on the "shot-gun principle."

Medicinal Treatment.—The list of drugs recommended is legion, and we must be guided solely by symptoms and conditions. Pure cod-liver oil, with the phosphates or malt extract, given continually for months, seems to give the best results. Ammonii chloridum, administered in *mistura glycyrrhizæ comp.*, is indicated in mucous or moist catarrh. *Ext. cocillanæ fluidum* gives admirable results. For *bronchorrhœa*, *calcis lactophosphatum*, creosote, iodum, terebene, or one of the balsams. *Never give opium for cough unless absolutely necessary.* Codeina or pulv. ipecacuanhæ et opii in small doses. Dyspnœa indicates spasmodic element—potassii iodidum, gr. iii-v, ter die, or physostigmina, gr. $\frac{1}{60}$, ter die. Inhalations of steam are sometimes beneficial. Dry cupping and counter-irritation when indicated. Carbolic acid and iodum in fetid bronchitis. Watch the strength of the patient, and administer tonics as indicated. *Avoid* heart-depressants. Treat all complications, diatheses, and other diseased conditions present.

CATARRHAL PNEUMONIA.

Symptoms.—Suffocative catarrh; lobular pneumonia; broncho-pneumonia; broncho-alveolar catarrh; the so-called "capillary bronchitis."

Definition.—An acute inflammation of the mucous lining of the smallest or capillary bronchial tubes and alveolar structure, involving diffused areas in one or both lungs.

Etiology.—Exposure to cold or dampness; extension from bronchitis. *Sequel and complication* of influenza, diphtheria, measles, and whooping-cough. *Predisposing causes* are scrofulous and rachitic diatheses; debility; age (young children

and old persons most commonly affected); emphysema; heart-disease.

Symptoms.—Before the capillary bronchioles and alveoli are invaded, the symptoms are those of an acute bronchitis.

Onset is heralded by a rise of temperature from 102° to 104° F.; respiration labored, increased, and difficult; expiration prolonged and noisy; inspiration short; dyspnoea gradually increases and is paroxysmal; skin dark and livid; venous congestion; cold perspiration; stupor. *Cough*, during the early stages, is troublesome and rather unsatisfactory; later, when cyanosis begins, it lessens. Expectoration is scanty, muco-purulent, often in small plugs, and is sometimes streaked with blood. Depression marked, and a main feature of the disease.

Auscultation.—Vesiculo-bronchial breathing, with subcrepitant râles, gradually lost until resolution begins, when they assume a harsh and bubbling character as in bronchitis.

Percussion.—Small areas of diffused dullness, with intervening clear areas.

Convalescence is slow and long; weakness and depression marked. Death due to cyanosis, and is painless.

Complications.—Pneumonia, tuberculosis, emphysema, atelectasis, chronic pneumonia, bronchiectasis.

Pathology.—It is very doubtful if capillary bronchitis can exist alone clinically. Any inflammation of the capillary tubes necessarily spreads by continuity of structure to the pulmonary alveoli, giving rise to a condition of catarrhal pneumonia. The symptomatology, prognosis, sequela, and treatment of a theoretical case of capillary bronchitis or catarrhal pneumonia are so closely allied that most authorities wrongly describe them under separate heads, on the principle of a *theoretical difference without a clinical distinction*.

The bronchial and alveolar mucous membrane is hyperæmic

and swollen; new cells are proliferated; an exudation of tenacious mucus and a purulent secretion that block the air-cells and bronchioles and act as a valve, causing imperfect aëration of the blood, cyanosis, functional atelectasis, emphysema, slight consolidation, and dullness. Resolution causes fatty degeneration, absorption and expectoration of the exudation, and hyperplasia.

Diagnosis.—*Pneumonia* is self-limited; ends by crisis; has rusty or bloody sputum; unilateral and circumscribed.

Acute Bronchitis.—Little or no fever; no dyspnoea; no dullness on percussion; large, moist, and bubbling râles; no marked prostration.

Prognosis.—Occurring as it does in debilitated children and old persons, is usually fatal in fifty percent. of the cases. The mortality is much less in middle age and hardy persons. *Convalescence* is long and tedious. *Ends by lysis.* *Acute stage* lasts about two weeks. The great danger lies in weakness and complications.

Treatment.—Confine patient to bed in a room with a uniform temperature. Avoid every source of cold and excitement. If seen in its incipient stage, administer full doses of tr. aconiti, tr. veratri, vinum antimonii, or liq. ammonii acetatis. Apply strong counter-irritation over the chest. Hot drinks and free diaphoresis. Quinina in small, tonic doses. When the disease is pronounced or fully developed, all depressants must be avoided, and alcoholic stimulants should be freely used. The chest should be rubbed with turpentine, camphor, or croton-oil and incased with raw cotton. Free, hot inunctions of cod-liver oil or sweet-oil, night and morning. The coal-oil products, although freely used by some, are entirely too depressing in their action, and should be used only with great caution.

Cough.—*Never give opium*, as it counteracts the very means

nature has provided for clearing away accumulations of mucus. Inhalations of medicated steam are sometimes beneficial, but possess the evil effects of relaxing the tissues. Small doses of any stimulating or sedative expectorant every two or three hours—*ammonii carbonas*; *syr. ipecacuanhæ*; mineral acids. *Emetics* of apomorphine and sulphate of zinc are said to relieve impending suffocation, but are extremely depressing, and *must be used only as a last resort*.

Convalescence.—Best nitrogenous diet; cod-liver oil; change of climate to sea-shore or mountains, for several months, if possible. Live constantly in the open air and exercise moderately.

HÆMOPTYSIS.

Definition.—Hæmoptysis, a *symptom* of disease, is a term applied to hemorrhage from the broncho-pulmonary tract.

Etiology.—Tubercular ulceration is a common cause; obstructive and valvular heart-troubles; pulmonary hyperæmia; excessive spraining or coughing; inflammation; hemorrhagic diathesis; anæmia; breaking of a pulmonary aneurysm; gangrene; cancer; vicarious menstruation; idiosyncrasy; plethora.

Symptoms.—Symptoms of causative disease. A feeling of fullness, burning, or tickling in the throat or behind the sternum, followed by a salty taste in the mouth and expectoration of frothy or pure alkaline blood. Sometimes patient has a salty taste in the mouth for days before hemorrhage takes place. It either follows severe coughing or may come suddenly without symptoms. Blood may be coughed up or flow without coughing. Patient becomes excited; pulse quick and tense; skin pale and covered with cold sweat. Hemorrhages apt to recur at intervals of a few days or months. Bubbling râles on *auscultation* and localized dullness on *percussion*. Small particles or casts of dark blood are coughed

up for several days or weeks after hemorrhage. *Pathology* and *prognosis* depend on causative affection. Patients rarely die from hemorrhage, unless due to breaking of a pulmonary aneurysm.

Diagnosis.—See page 208.

Treatment.—*Preventive.*—Treat cause. Establish menstruation when it is vicarious. In *plethora*, relieve by regulating diet and venesection. *Foresee the probability of hamoptysis in weak, scrofulous children, and strengthen them.* Thickness of the blood tends to avert hemorrhage; hence regulate fluidity by diet, hydragogues, and salines. In anæmia, give iron. Ten grains of *calcis lactophosphatum*, dissolved in a glass of water, and sipped during the day, will tone the bronchial mucous membrane and vessels. When there is a feeling of fullness behind the sternum, as if a hemorrhage were imminent, twenty drops of tr. digitalis in hot water, every four hours, accompanied by a small blister, and reassurance of the patient, with rest in bed, often prove effective.

During the hemorrhage, apply ice to the chest; administer a hypodermic of morphina sulphas, gr. $\frac{1}{4}$; absolute rest in bed in recumbent position. If heart is tumultuous and strong, give aconite, veratrum, or gelsemium. *The condition of the heart indicates the use of stimulants or depressants.* Small pieces of ice or common salt in the mouth constitute remedies used by the laity. Hypodermics of ergot are of little avail, as they do not contract the pulmonary arterioles as expected, and may do more harm than good. *Hamostatics in general are of little avail*, as the hemorrhage is over by the time they begin to act. *Inhalations and sprays during the hemorrhage are absolutely worthless*, as they never reach the lung structure or seat of hemorrhage. *Strictly avoid* all hot drinks, coughing, talking, and excitement.

Convalescence.—Rest in bed; flying blisters on chest; moist

air; uniform temperature; morphina or codeina to control coughing. Phenacetin or acetanilide for fever. Quinina alone favors hemorrhage. Diet of milk, rice, beef-juice, white of egg, and a little acidulated drink. Gradually harden patient, and insist on change of climate by a long sea-voyage; mountain life, and out-doors most of the time.

PULMONARY HYPERÆMIA.

Synonyms.—Congestion of the lungs; active or passive fluxion of the lungs.

Definition.—A congestion of a portion of one or both lungs.

Etiology.—*Active Hyperæmia.*—Violent heart-action; over-stimulation; violent exercise; alcoholism; direct irritation; excitement.

Passive Hyperæmia.—Valvular heart-diseases; dilatation or hypertrophy of the heart; obstruction of pulmonary circulation by tumors, thrombi, emphysema, or pneumonia. Feeble heart-action. Complicates fevers and Bright's disease.

Symptoms.—A sense of fullness, without pain, over the chest; short, dry, hacking cough, with an occasional expectoration of frothy or bloody mucus; dyspnœa of varying character; *no fever*; pulse strong and full; lasts two to seven days. *Chronic hyperæmia* presents similar symptoms, not so acute at first. Slight impairment of resonance on percussion; diminished vesicular murmur, with moist and subcrepitant râles.

Pulmonary Œdema.—Acute or chronic hyperæmia is frequently followed or accompanied by an exudation of serum into the pulmonary alveoli, causing marked dyspnœa; cyanosis; serous or tough mucus expectoration, tinged with blood;

large, moist râles; slight impairment of resonance on percussion.

Pathology.—Lungs dark red, and do not wholly collapse; capillary vessels distended with blood. Section resembles splenic structure; hence the term *splenification*. When serum has exuded into alveoli (œdema), the lung pits on pressure; is heavy; does not collapse; serum and blood escape on section.

Prognosis.—Always grave, unless active treatment is employed; depends on cause. Simple acute cases terminate in two to seven days. Œdema is always attended with doubt.

Treatment.—Strike directly at cause. When pulse is full or death imminent, venesection at once. Dry or wet cups. Free purgation; diaphoresis. Stimulants as indicated. Emetics often relieve. *Passive congestion* demands regulation of cause. *Avoid* large quantities of hot drinks or hot foods, hot or cold air, and all excitement. *Milk diet*; free use of fruits and acids. Mild cases are averted by aconite or veratrum.

R̄

Tr. veratri viridis vel tr. aconiti rad.....	gtt. j.
Vini antimonii	gtt. iv.
Tr. opii	gtt. j.
Liq. ammonii acetatis.....	f 3 ss.

M. Signa. Every hour, in water, until relieved.

APNEUMATOSIS.

Definition.—Collapse of the air-cells in certain portions of the lungs, either acquired or congenital. A symptom, not a disease.

Varieties.—Congenital apneumatosi*s* or *atelectasi*s**; acquired apneumatosi*s*.

Etiology.—*Congenital.*—Improper expansion of air-cells at

birth on account of weakness; improper innervation or bronchial obstruction.

Acquired.—Blocking of bronchial tubes by mucus or foreign bodies; bronchitis; laryngeal or tracheal obstruction; pneumonia; compression by pleural effusion; pericardial effusion; tumors; cancer; aneurysm; and spinal curvature.

Symptoms.—Patient is weak; skin and nails livid from improper aëration of blood; speaks in low voice or whispers; respiration shallow and hurried; pulse feeble; absence of vesicular murmur over affected area; slight dullness, on percussion, recognized at bases of lungs. Temperature often subnormal.

Congenital apneumotosis shows itself, at birth, in weak children who cry very little; abdomen retracted; skin bluish; intercostal spaces sunken; great difficulty in nursing. *Acquired apneumotosis*, recognized by symptoms of cause as well as those mentioned.

Pathology.—Lung dense; heavy; sinks in water; contains no air in affected area. Most common in lower lobes of lung. Acquired cases of compression are bloodless, airless, and a gray or reddish-brown color (*carnification*). A bronchus becomes blocked, incloses air in the alveoli, which is absorbed; alveolar walls collapse and contract. The “valvular action” theory is hardly probable.

Treatment.—*Congenital*.—At birth, see that the child cries long and hard to completely fill the air-cells. Throw hot water in its face; strike its chest with a cold towel to induce respiration. Artificial respiration if necessary. Stimulate freely, and avoid exposure.

Acquired.—Seek cause and remove if possible; inhalations of compressed air and oxygen; daily pulmonary gymnastics; supporting and stimulating diet. Stimulating expectorants if indicated. Symptomatic treatment.

VESICULAR EMPHYSEMA.

Definition.—A condition of the lung in which the air-vesicles are enlarged; the tunicity or continuity of their walls destroyed; and an escape of air into the connective and sub-pleural tissue.

Etiology.—Forced or prolonged inspiration or expiration, as in coughing or blowing wind-instruments; lack of nutrition and degenerative changes of alveolar walls; heredity. Follows pneumonia, chronic bronchitis, asthma, whooping-cough, and over-exertion. Compensatory emphysema in phthisis. Present in young adults and old persons.

Symptoms.—*Begins* with shortness of breath and symptoms of bronchitis. Least exertion causes marked dyspnoea; cold air and asthma aggravate it; dyspnoea increases, and is worst at night. Face is dark, livid, and veins prominent; nostrils dilated; mouth open; head thrown back; and all muscles of respiration are used to obtain breath.

Auscultation.—Prolonged expiration; short inspiration; vesicular murmur diminished; whistling, moist, or bubbling râles; vocal fremitus diminished; heart-sounds displaced.

Percussion.—Marked tympany or hyper-resonance; cardiac dullness, lessened and slightly displaced; liver dullness, depressed. Chest assumes a cylindrical or so-called "barrel appearance"; more or less stooping; lower part of chest contracted; intercostal spaces widened; and whole chest moves on respiration. Paroxysms of spasmodic asthma complicate.

Pathology.—Forced dilatation of the air-vesicles causes a loss of tone to their walls; these gradually atrophy or degenerate from lack of nutrition, and ultimately rupture, thus merging a number of air-cells into one and allowing air to escape into the connective tissue. This causes obstruction to pulmonary circulation; extra work on the right side of the

heart, with hypertrophy, dilatation, fatty degeneration, and the train of symptoms consequent upon this condition. Left lung is most susceptible, and in upper lobes. Paroxysms of dyspnœa are due to neurotic element present. Lungs do not collapse on opening the chest-walls; crackle on pressure; contain air-spaces the size of a small cherry; do not sink in water; very pale in color or light gray.

Prognosis.—Rarely if ever causes death directly. Patients die of complications—bronchitis or heart-disease.

Treatment.—*Preventive.*—Prohibit forced inspiration, expiration, or any physical cause; treat conditions of bronchitis; give dry, *most nutritious diet*, such as meat, albumens, and concentrated foods. Open-air exercise in moderation; slight work; and “put off the day on which he will become an invalid.” Tonics of iron, quinine, and cod-liver oil. Change of climate. Potassii iodidum, with tonics or lobelia, relieves the spasmodic element and retards the disease. (Form, p. 327.)

During a paroxysm, administer a hypodermic of morphinæ sulph., gr. $\frac{1}{4}$, and atropinæ sulph., gr. $\frac{1}{20}$; inhalations of compressed air or oxygen. Attacks are often relieved in a half-hour or less by inhalations of equal parts of nitrous oxide and pure oxygen. Nitroglycerin or eserine, gr. $\frac{1}{60}$, ter die, relieves dyspnœa in some cases.

BRONCHIAL ASTHMA.

Definition.—A functional, paroxysmal neurosis of the respiratory tract, recognized by attacks of great dyspnœa, which are followed by intervals of repose.

Etiology.—*Exciting Causes.*—Change of weather; cold air; climate; inhalation of dust, smoke, or irritating vapors and powdered ipecac; pollen from flowers or grain; over-eating; sexual excesses; particular articles of diet; excite-

ment or fear; Bright's disease; any irritation to the pneumogastric nerve.

Predisposing Causes.—Heredity; bronchitis; emphysema; gouty diathesis; debility. More common in men, young adults, and high walks of life.

Symptoms.—*Paroxysm.*—Usually appears between two and four o'clock A.M., or in the afternoon. Wake with a sense of oppression of the chest, with great effort at breathing. May be preceded by drowsiness, uneasiness, sneezing, and slight coughing. *Sudden dyspnea*, rapidly increasing; gasps for breath; head thrown back; mouth open; muscles of respiration standing out; chest full and rounded; veins full and prominent; skin dusky; whistling, unsatisfactory cough; no fever; cannot lie down. Patient wants near an open window. *Inspiration* is short and wheezing; *expiration* prolonged and noisy. Hyper-resonance on percussion; vesicular murmur absent or weak; sibilant, wheezing, and whistling râles. Slight expectoration of grayish pellets of mucus, often stained with blood. After a few hours, paroxysm subsides, but may last for days, and returns at indefinite periods.

Pathology.—*Undoubtedly of neurotic origin.* Having a predisposition to asthmatic attacks, an irritant to the peripheral branches of the pneumogastric nerve causes contraction of the involuntary muscular tissue surrounding the smaller bronchi; narrowing or occluding their caliber; preventing the normal tidal respiration; hence all the symptoms. The catarrhal theory of a temporary swelling of the bronchial mucous membrane is hardly plausible, owing to the suddenness of the onset and the ready response to treatment. When complicating other affections, we have in addition the pathology of the disease.

Diagnosis.—*Cardiac Asthma.*—Not paroxysmal; very persistent; history of heart-disease; general symptoms.

Laryngeal affections and polypi differentiated by direct examination, and not readily mistaken.

Prognosis.—*Never directly fatal.* Great danger lies in complications, such as heart-disease, emphysema, and dropsy. A chronic disease, and rarely if ever cured.

Treatment.—*Paroxysm.*—Inhalations of equal parts of nitrous oxide and oxygen, nitrite of amyl, ether, chloroform, or bromide of ethyl. Tablets of trinitrin, gr. $\frac{1}{100}$, dissolved in mouth. Hypodermic of morphina and atropina is very efficient, but not always desirable. Bromides and chloral.

Nauseants of lobelia, ipecacuanha, and smoking belladonna and stramonium leaves, steeped in niter and dried, are common, mild measures, but rather undesirable. Ext. grindeliæ fluidum. Stimulants of hot coffee, strychnina, alcoholic preparations, or cocoa in nervous subjects. Phenacetin or acetanilide, in ten or fifteen grain doses, may give rapid relief in obstinate cases where other means have failed. Inhalations of condensed air, with exhalation into rarefied air. Make a strong mental impression on patient. Fright is said to have cured very obstinate paroxysms. *All remedies gradually fail in time.* Sangree claims excellent results from an ice-pack.

Preventive.—Systematic course of arsenic, alternated with potassii iodidum, and change of air. *Avoid* all causes. Treat complications. *Light diet*; never eat a *full* meal. Hunt for and treat all possible reflex causes, such as uterine diseases in women. When threatened with a paroxysm, give:

R $\bar{c}$

Tr. lobeliæ.....	f ̄ 5 v.
Ammonii iodidi.....	3 j.
Syr. pruni virginianæ.....	f ̄ 3 ijss.
Aquæ.....	q. s. ad. f ̄ 3 iv.

M. Signa. One teaspoonful every two or four hours as necessary.

PNEUMONIA.

Synonyms.—Croupous or lobar pneumonia; pneumonitis; “lung-fever.”

Definition.—An acute, localized, croupous inflammation of the alveolar structure of one or more lobes of the lung, accompanied by an exudation into the air-cells.

Etiology.—Recent research seems to point to a distinct germ (*Micrococcus pneumonia*) as the cause of pneumonia. *Exciting and predisposing causes* are exposure to cold and dampness; alcoholism; rheumatism; gout; and debility of any kind. *Surgical causes* are foreign bodies; injury to chest-walls by blows or penetration. Most common in winter; *not self-protective*; contagious (?); at times epidemic; middle life usually, twentieth to forty-fifth year. Recently classed as an acute, infectious or contagious fever.

Symptoms.—*Onset or First Stage.*—Begins with an uneasy sensation in chest; pain in the head and back; tongue furred; malaise; slight cough; chilly sensations, followed by *one distinct chill, not repeated*; rise of temperature from 102° to 105° F. Fine subcrepitant râles on auscultation (similar to the sound produced by rolling the hair between the fingers) at end of inspiration, localized usually in one lobe of either lung. Sometimes the onset is insidious. Percussion note unaltered. *Cough* at first is dry, but changes to expectoration of sticky mucus, stained with blood. A dull or sharp pain over the region of nipple. *Pulse not increased proportionately to the rapidity of breathing.*

Second Stage.—*Respiration* grows quicker and more shallow—from thirty to ninety per minute; *pulse* slightly increased; temperature high, 104° to 105° F.; skin very dry and hot; marked localized dullness on percussion over diseased lobe;

vesicular murmur lost, and replaced by bronchial breathing; bronchophony; lessened chest movement on affected side. *Cough* painful, and *expectoration* is of a *thick, tenacious, rusty-colored*, or bloody character. Slight delirium. *Urine* acid, high-colored, and chlorides diminished; occasional albuminuria. Jaundice complicates, but is rare. An eruption of herpes often occurs on lips, anus, or limbs between second and fifth day.

Third Stage.—Resolution. Between the sixth and ninth day, temperature, respiration, and pulse fall *by crisis*. Paralysis of the heart (*heart-failure*) is most common in this stage. Tongue moist; skin assumes a natural condition, and all symptoms improve. Dullness gradually diminishes; *redux* crepitant râles. *Cough* not so painful; sputum becomes yellow or greenish, less sticky, and loses bloody character.

In place of crisis and resolution, the case may run on to *catastrophe*, with a high evening temperature; dullness and slow cough; marked depression; night-sweats; and slow recovery. In old persons, expectoration may become red and serous—“*prune-juice*” *expectoration*. Many cases assume a typhoid nature and are improperly termed *typhoid pneumonia*.

Pathology.—Onset.—An irritant, probably the *Micrococcus pneumonia*, causes a congestion of the alveolar mucous membrane of one or more lobes of the lung—most commonly the lower right lobe. In aged persons and in children the apex is most commonly affected. An exudation of thick, tenacious serum, which causes adherence of walls of the air-vesicles; hence the fine subcrepitant râles caused by their expansion at end of inspiration. Lobe of lung is red or reddish brown; is in a stage of congestion; contains frothy serum, new cells, and proliferated epithelium; and floats in water.

Second Stage.—Red hepatization, or stage of exudation. Exudation into air-vesicles continues; embryonic cells are formed;

epithelium is proliferated; diapedesis; and occlusion of air-cells. Lung is red; cuts like liver and looks not unlike it; sinks in water.

Third Stage.—*Resolution or gray hepatization.* Fatty degeneration of the exudation; absorption of part and expectoration of remainder until air-cells resume their normal condition. Color grayish, due to leucocytes and decolorized red blood-cells.

If resolution fails, there is a *fourth stage*, in which the lung is soft; infiltrated with purulent material; localized abscesses; usually followed by death from septicæmia, pyæmia, or pulmonary gangrene.

Pleuro-pneumonia is a complication of pleurisy and pneumonia, and should never be used as a synonym for pneumonia, which is a separate affection.

Diagnosis.—See *Pleurisy*, page 337.

Prognosis.—*Sthenic (active) pneumonia* usually terminates favorably in ten days or two weeks by crisis. *Asthenic (inactive or lingering) cases* are unfavorable. When complicating alcoholism or kidney affections, mostly fatal. *Unfavorable signs* are very rapid breathing, with low temperature; marked delirium or convulsions; involvement of both lungs; abscess; gangrene; paralysis or weakness of the heart; hyperpyrexia; typhoid symptoms; and jaundice. *Death* may occur from collateral hyperæmia or œdema in the first or second week; in the second stage, from cerebral engorgement, paralysis or weakness of the heart; third stage, from albuminuria or septic infection.

Treatment.—*Absolute rest in bed.* If called during *onset*, when heart's action is full and bounding, give tr. aconite or veratrum (with or without tr. phosphorus, grt. i–ij, every two hours), every hour or half-hour (form. p. 322); vinum antimonii or liq. ammonii acetatis; and a full saline purge, until

symptoms are abated. A pill of aconitina, digitalin, and veratrina is very good. Many cases that threaten to become true pneumonia are entirely checked by this treatment. Full doses of acetanilide or phenacetin are so depressing that they must be guarded or entirely omitted. Blood-letting, an old method formerly practiced in most cases, has justly fallen into disrepute. It is only justifiable in intense congestion, threatened oedema, or pneumonia of alcoholism. Blood-letting drains away too much nutritive principle from the blood that will be needed later during crisis and convalescence. Wet cups; tr. iodi; or blisters over chest. *Incase chest with raw cotton* or poultices, kept constantly hot. Raw cotton is preferable, as poultices cannot be kept hot and are liable to chill patient during changing. Inunctions of hot oil, daily, to chest add to protection.

After the stage of excitement or onset, avoid all depressants, and, from this time until crisis is past, watch the heart closely and stimulate with strychnina or ammonii carbonas, gr. ii-v, every two or four hours, combined with tonic doses of quiniæ bisulphas. Digitalis contracts the bronchial arterioles and is not desirable. Give richest, concentrated, albuminous diet, so that the bulk of the blood may be kept small and rich. *Watch closely for crisis*, and be ready to administer a full dose of ammonii carbonas or other stimulant to avert fatal syncope.

During resolution, give stimulating expectorants; Huxom's tincture of bark; glyceritum hypophosphiti comp.; and good diet. Never allow patient to go out-doors until all symptoms of the disease have disappeared. The Germans reduce fever by cold baths or cold packs. *The main point in treatment of all stages is to support the heart.* Opium must be avoided unless absolutely indicated.

CHRONIC PNEUMONIA.

Synonyms.—Pneumonic phthisis; caseous pneumonia; serofulous pneumonia; non-tubercular consumption.

Definition.—A chronic inflammation of the parenchymatous structure of the lungs, accompanied by degeneration of lung-tissue and formation of cicatricial tissue, usually terminating in phthisis tuberculosis.

Etiology.—*Predisposing Causes.*—Low vital powers; serofulous and tubercular diathesis; debilitating diseases; heart-diseases; and chronic bronchitis. *Exciting causes* are bad colds; pneumonia; acute bronchitis; irritating gases; and dust.

Symptoms.—Following pneumonia or bronchitis, patient often complains of chilliness or rigors in afternoon, followed by rise of temperature from 102° to 104° F.; profuse and exhausting night-sweats; morning temperature normal. *Cough* worst in morning and night. *Expectoration* of frothy mucus; tenacious grayish pellets, purulent or blood-streaked. *Hæmoptysis rare.* Dullness on percussion over lower lobes of lungs mostly. *Cavities.* Mucous râles; bronchial breathing and bronchophony. Loss of appetite; great prostration; face flushed in afternoon. Intermittent fever with rigors indicates purulent infiltration. Chest-walls sunken; marked supra- and infra-clavicular depression.

Pathology.—Although classed as a non-tubercular affection, its origin is questionable. When caseation is present, the case is undoubtedly tuberculous. Inflammation spreads to interstitial tissue, forming new fibrous tissue, which contracts, cuts off nutrition, causes atrophy, degeneration, and, in many cases, purulent infection. Tissue breaks down; is expectorated; and leaves cavities. Fever is hectic in type. Communication may be established between the lung and

pleura, causing pneumothorax. Interference with circulation causes dilatation of right ventricle of heart and its train of symptoms.

Diagnosis.—See *Chronic Tuberculosis*, page 95.

Prognosis.—When taken early, many cases are checked, and patients live for years, often dying of other affections. Untreated cases terminate fatally in three to five years.

Treatment.—Very best hygienic surroundings; constant out-door life in a dry, uniform climate; best nutritious diet; sweet, rich cream; exercise in moderation. Rest in bed during the afternoon hours when fever comes on. *Combat fever* with pill acetanilide comp. (form, p. 27) or other antipyretics. *Break night-sweats* with tr. belladonnæ, atropina, zinci oxidum, or a cup of strong, hot sage-tea, a few moments before retiring. Expectorants are indicated in chronic bronchitis. Treat bronchorrhœa. Calcium lactophosphate, glycerol phosphates comp., and cod-liver oil. *Avoid* hypnotics. Symptomatic treatment. The main feature is to prevent tubercular infection.

FIBROID PHTHISIS.

Description.—A variety of chronic pneumonia that invades the interstitial tissue of the lung, with hyperplasia, hypertrophy, and formation of contractile tissue, which contracts and obliterates the alveoli and bronchioles. Most common in those who work in mills, factories, and dust. Called *miner's phthisis*; *cirrhosis of the lung*; and *Corrigan's disease*. Slight cough, worst in cold, damp months; little expectoration at first. As disease process advances, symptoms are identical with true pneumonic phthisis, and the case is liable to become tuberculous. Marked retraction of chest-walls from pleuritic adhesions. Dullness on percussion, with isolated areas of tympanitic resonance.

Prognosis.—Disease may be held in check for years. *Average duration* is ten to fifteen years. Tuberculous infection is the usual ultimum.

Treatment.—Avoid cause by change of occupation, outdoor life, and treat as in chronic pneumonia. Hydrargyri chloridum corros.; aurii et sodii chloridum; iodides; and other alteratives or absorbents *may* prevent hyperplasia, but can never restore lost tissue.

DISEASES OF THE PLEURA.

ACUTE PLEURISY.

Synonym.—Acute pleuritis.

Definition.—Localized, or diffuse, acute inflammation of the serous membrane lining the pleural cavities, accompanied by a plastic exudation, and terminating in resolution or chronic pleurisy.

Etiology.—Exposure to cold or wet; traumatism. *Secondary* to pneumonia; Bright's disease of kidneys; variola; rheumatism; phthisis; pericarditis; septic and eruptive fevers; pneumothorax; and all septic poisons.

Symptoms.—*First Stage.*—*Dry stage, or onset.* A chill or rigor, often repeated, accompanied by severe, sharp pain in the side, near the nipple, which is increased by respiration, coughing, talking, and deep pressure in intercostal spaces. Some fever, ranging from 100° to 104° F. *Respiration* increased and shallow; slight dyspnoea; tongue coated; constipation. Chest-walls do not move regularly on affected side; pulse rapid. Dry, hacking cough, very much suppressed. Vesicular murmur lessened, and replaced, over affected area, by a *friction-sound* heard during inspiration and expiration. Friction-sound varies in degree from a very slight to a harsh, grating sound, which can be recognized by placing the hand on chest-walls. Patient lies on affected side.

Second Stage.—*Effusion.* By end of second or third day, friction-sounds lessen and disappear; vocal fremitus lessened;

no vesicular murmur; ægophony; localized dullness on percussion, varying with position. When sitting, dullness is low down posteriorly. *Pain* decreases; dyspnoea increases according to effusion. Loss of movement on affected side of chest; intercostal spaces full; very little or no cough; fever from 100° to 102° F.; prostration; quick pulse; heart often displaced by effusion. When there is no perceptible effusion, the case is termed *dry pleurisy*.

Third Stage.—Resolution. In second week fever lessens; effusion disappears rapidly or slowly; vesicular murmur returns; friction-sounds; lung gradually expands; chest-walls and intercostal spaces sink slightly, or, in some cases, markedly. If case does not progress to resolution, it becomes chronic (q. v.).

Pathology.—*First Stage.*—Hyperemia of pleural serous membrane, usually localized to a part or the whole of one pleural cavity. Vessels engorged, dilated, and membrane of a dull red in place of a normal shining appearance. *Pain* is caused by friction of inflamed membrane during respiratory efforts.

Second Stage.—Exudation of leucocytes; cell-proliferation; and formation of a fibro-plastic, sticky exudation, which arranges itself in layers on the membrane (*dry pleurisy*), or may continue by an exudation of serum or a fibrinous fluid, in large amounts, nearly filling the pleural sac. Effusion presses on lung, causing temporary or permanent apneumatosiis. Pain is lessened by intervention of effusion between inflamed folds of the membrane, preventing direct friction.

Third Stage.—Effusion is gradually absorbed; folds of membrane come in contact and form adhesions of fibrous tissue.

Diagnosis.

ACUTE PLEURISY.	PNEUMONIA.
Onset by several chills or rigors.	Onset: one distinct chill.
Friction-sound during inspiration and expiration.	Subcrepitant râle at end of inspiration.
Moderate febrile symptoms.	Marked febrile reaction.
Short, dry cough.	Cough with expectoration.
Pain sharp and shooting.	Dull pains.
Dullness changing with position.	Dullness localized; unchanging.
Absence of vesicular murmur and fremitus.	Fremitus increased.
Chest enlarged; intercostal spaces bulging.	Absence of chest-enlargement.
Frothy expectoration.	Bloody or "rusty" expectoration.
Terminates by lysis.	Terminates by crisis.
No bacillus demonstrable.	<i>Micrococcus pneumoniae</i> .

Intercostal neuralgia and myalgia are distinguished by being paroxysmal; location; absence of physical signs; and difference in onset.

Prognosis.—Most cases recover in three or four weeks by resolution. Many become chronic. *Complicated* by pneumonia or empyema. *Secondary pleurisy* offers a bad prognosis.

Treatment.—*Onset.*—If pain be very severe, dyspnoea great, and pulse full, administer a hypodermic injection of morphina and atropina. Give tr. aconiti or tr. veratri every hour (form, p. 322), until heart's action lessens. In plethoric, full-blooded persons with a full, bounding pulse, venesection is justifiable and gives quick relief. Leeches, dry cups, or blisters; hot applications, provided they be kept hot constantly, relieve pain, when not too severe. If heart be weak, infusion of digitalis, administered in hot water. Full doses of phenacetin, acetanilide, or salicylates lessen full pulse and fever, but are too depressing. A full dose of tr. jaborandi, to produce free diaphoresis, is said to abort many threatened

cases. Strapping the affected side with adhesive straps will lessen chest-movements and relieve pain. Opium must be avoided as much as possible. (See *Peritonitis*.) Inhalations of oxygen.

Effusion.—Great effusion, with marked dyspnœa, requires immediate aspiration, with perfect antiseptic precautions. Infusion of digitalis with potassii acetat or nitrat, every two to four hours, often lessens it, if combined with free saline laxatives and use of minimum amount of liquids.

Resolution.—Diaphoresis, diuresis, and salines to favor absorption of lymph. Potassii iodidum or syr. ferri iodidi aids in absorption of lymph. Most nutritious diet; iron tonics and stimulants as indicated.

CHRONIC PLEURISY.

Synonym.—Chronic pleuritis.

Definition.—A chronic inflammation of the serous lining-membrane of the pleural cavities, recognized by a history of acute or subacute pleurisy; presence of pleuritic effusion; absence of acute symptoms; and gradual loss of flesh.

Etiology.—Most commonly follows acute or subacute pleurisy. *Complicates* tuberculosis; pneumonia; Bright's disease; syphilis; rheumatism; or alcoholic excesses.

Symptoms.—Usually latent and not constant: no marked dyspnœa; slight or no cough; may have marked emaciation, or no loss of flesh. At times there is hectic fever, night-sweats, and rapid pulse. Respiratory and voice sounds absent or diminished; dullness on percussion, varying with position, if general; or dullness constant, if sacculated; chest full; intercostal spaces bulging and wide; diminished motion on affected side during respiration; heart and liver displaced.

No pain. When absorption occurs, chest-walls sink; feeble breath and lung sounds. Effusion in chronic pleurisy often becomes infected with pyogenic germs and produces *empyema*, with marked hectic fever, chills, and emaciation. May point as an abscess in intercostal spaces; break; allow pus to escape and air to enter pleural cavity, causing *pneumothorax*. Abscess may open into lungs and be expectorated; perforate diaphragm or pericardium.

Pathology.—Same as in acute pleurisy, but much slower and more chronic. Membrane thick; dull-gray color; very rough; and many bands of adhesion. When infected with pyogenic germs, the whole mass becomes purulent (*empyema*).

Diagnosis.—*Hydrothorax* is bilateral; complicates kidney and cardiac diseases, with no inflammatory history. Aspirator is best diagnostic agent.

Prognosis.—*Chronic pleurisy* may last for years without endangering life. Great danger lies in empyema or tubercular infection, both of which are dangerous to life—the latter always fatal in time.

Treatment.—Chronic pleuritic effusion requires dry, nutritious diet; saline cathartics; minimum of liquids; and flying blisters to chest. *Aspiration* often proves curative, and must be done when other means fail. Symptomatic and supporting treatment.

Empyema invariably requires surgical interference. Open abscess if it points. Aspiration is not satisfactory. Supply free drainage by openings anterior and posterior, with free incisions into pleural cavity; cleanse twice daily with mild antiseptic solutions of boric acid, creolin, carbolic acid, or hydrogen peroxide. Most nutritious diet; iron, quinine, phosphates, cod-liver oil, and stimulants as indicated. To this combine best hygiene and careful nursing, with thorough antiseptic measures.

PNEUMOTHORAX.

Definition.—A condition resulting from disease or injury, in which air has entered the pleural cavity through the lungs or chest-walls.

Etiology.—Tubercular ulceration; breaking of abscesses; empyema; perforation of chest-walls; or any means that may destroy the continuity of lung structure or chest-walls and permit air to enter.

Symptoms.—Vary according to cause. *Acute cases* commence with a sudden, sharp pain in the side; a feeling of something giving way; great dyspnoea; small pulse; profuse sweat; and threatened collapse. Respiration rapid and shallow; intercostal spaces depressed on inspiration; affected side of chest bulging and enlarged. Paroxysmal cough. *Per-cussion note* tympanitic or hyper-resonant. Vesicular murmur lost or diminished; amphoric respiration; metallic tinkling, if effusion be present. Pleurisy is developed from irritation of air.

Pathology.—That of cause. Air in pleural cavity, if inclosed, may be absorbed. It acts as an irritant; sets up inflammation, which is followed by effusion, which is generally infected with pyogenic germs and causes empyema.

Diagnosis.—*Emphysema* is always bilateral, with a different history of onset.

Prognosis.—Very bad. Most probable termination is death, unless due to traumatism or surgical means.

Treatment.—Hypodermic injection of morphina and atropina to relieve pain, cough, and excitement. Follow with small doses of opium if indicated. Over-distention with air indicates aspiration or puncture of chest-walls and introduction of a metallic tube with a valve that allows air to escape

but none to enter. The inclosed air may absorb without surgical means. Treat effusion as in pleurisy and empyema. Best nutritious diet; stimulants; tonics; and constant outdoor life in best atmosphere.

HYDROTHORAX.

Definition.—Dropsy of both pleural cavities, secondary to some other affection.

Etiology.—Bright's disease; valvular heart-diseases; obstruction to pleural circulation by cancer or tumors.

Description.—Serous effusion into both pleural cavities is slow in onset, without acute symptoms, and accompanies general dropsy. Dyspnoea gradually increasing; symptoms of causative disorder; dullness on percussion; diminished respiratory murmur. Effusion may become purulent and is termed hydro-pyothorax.

Prognosis.—Depends on causative trouble.

Treatment.—*Causative.*—Aspiration is only palliative, as fluid returns. Dry diet; salines and drastics, if patient can endure them; limit amount of liquids taken; treat symptoms.

THE NERVOUS SYSTEM.

INTRODUCTION.

THE nervous system is a complete whole, and for purpose of study is subdivided into the cerebro-spinal axis and the sympathetic system. The *cerebro-spinal axis* consists of the brain, spinal cord, medulla oblongata, and the nerve-trunks originating from them. The *sympathetic nervous system* is a series of ganglia lying on each side of the spinal column, connected by commissural fibers, and extending from the ganglion of Ribes, on the anterior communicating artery at the base of the brain, to the ganglion of Impar. in front of the coccyx. Every sensation, motion, physiological and pathological action is dependent on direct and reflex nervous action.

Reflex nerve-action is a stimulation and transference of an impression through an afferent nerve to a nerve-center, and its return through an efferent nerve to the parts, causing motion or physiological action. It is either motor, secretory, tactile, or inhibitory.

Localization of Senses and Functions.—Every sense and function is dependent upon the action of a certain group of nerve-cells distinctly localized in the brain or spinal cord, which communicates with the parts by means of nerve-fibers. Any disease of or interference with these nerve-centers or their communicating nerves results in a physiological impairment of the parts governed by them, and it is by this method that nervous diseases can frequently be localized.

Diagnosis of nervous diseases is dependent on symptoms only.

MOTION.

Every muscle is endowed with a certain physiological motion that must be studied in health to be recognized. Impairment of the nerves supplying that muscle, be it voluntary or involuntary, produces (1) *paralysis*, partial or complete; (2) *convulsions*, tonic (constant) or clonic (interrupted); (3) *incoordination*—the inability to produce voluntary muscular movements in proper order, most marked when the eyes are closed.

SENSATION.

Sensation is the recognition of impressions made upon the peripheral sensory nerve-organs of the body, and recognizes touch, pain, heat, and cold. A loss of sensation, partial or complete, is termed *anesthesia*. When there is insensibility to pain, it is termed *analgesia*. *Polyesthesia* is a pathological sensation in which the contact of one point produces the sensation of several. *Hyperesthesia* is an increased sensibility. *Hyperalgesia* is increased sensibility to pain.

ELECTRICAL REACTIONS.

Every muscle and nerve, in a physiological state, will give a certain reaction when stimulated by electricity. In these examinations, use is made of the galvanic, faradic, and static currents.

Galvanic electricity is a primary, constant current, with two distinct poles—a positive pole (*anode*) and a negative pole (*kathode*). *The anode is sedative in its action; the kathode is irritant.* Four special reactions are noted in the use of galvanism:

(1) When the anode is placed over the spinal center and the kathode is brought in contact with the skin over a muscle

or nerve, there is a reaction or contraction, called the *kathodal closing contraction* (KCC). This is due to closing the circuit.

(2) When the kathode is raised from the body, there is another contraction, called the *kathodal opening contraction* (KOC), caused by breaking the circuit.

(3) Reverse the order by placing the kathode over the spinal center and the anode over the muscle or nerve, and when applied there is a contraction—*anodal closing contraction* (ACC).

(4) When the anode is removed from the muscle or nerve, we have an *anodal opening contraction* (AOC).

These reactions must be studied in health, and according to their impairment so are we able to diagnose many nervous diseases. (See appropriate works on electricity.)

Faradic electricity is an interrupted, induced, or secondary current, whose poles are never constant, except in the primary coil. The two poles are usually applied over the same muscle at once, and a series of clonic contractions ensues if the interruption of the current is slow, or tonic if the interruption is very rapid.

Static electricity is derived by friction; stored in Leyden jars; used directly by sudden discharges of the electric spark into the different muscles; or by the production of the static breeze.

Reaction of degeneration is a diminution or loss of response to the faradic current, with no impairment or a slight increase of galvanic excitability, which may also diminish or be lost, indicating a lesion of the peripheral nerves or spinal cord.

TROPHIC CHANGES.

Nervous disorders always produce some nutritive disturbance in one or more parts of the body: wasting of the muscles: falling of the hair: impairment of nail-growth: ulcerations: eruptions on the skin; and disorders of the special senses.

REFLEXES.

The reflexes of the body afford a valuable index to the diagnosis of nervous diseases, and are classed as the superficial or *cutaneous reflexes* and the deep or *tendon reflexes*. *Scapular reflex* is a contraction of the scapular muscles when the skin between the shoulders is irritated. *Plantar reflex* is a contraction of the plantar muscles when the sole of the foot is tickled. *Gluteal reflex* is a contraction of the gluteal muscles on stimulation of the skin over them. *Cremasteric reflex* is a retraction of the testicle on the same side when the inner and upper part of the thigh is irritated. *Abdominal reflex*—contraction of the abdominal muscles when irritated.

Tendon Reflex.—Strictly speaking, there is no tendon reflex, as the contraction is not done by the tendon, but by the muscle to which it belongs. If the ligamentum patella or tendinous part of the rectus femoris muscle is struck a smart blow when the one leg is crossed loosely over the other and hanging in a slightly flexed state, there is a contraction of the muscle, called the *patellar reflex* or knee-jerk.

Clonus is a reflex, irregular contraction of a muscle when suddenly stretched and held in that position. Clonus manifests itself best when the foot is suddenly flexed on the leg, by a series of rhythmical contractions of the gastrocnemius and soleus muscles, numbering from six to nine in each second (*ankle-clonus*).

Other valuable symptoms must be noted. Derangement of the special senses and the power of intellection, tremors, delirium, insomnia, and vertigo afford valuable diagnostic indices.

THE NEUROSES.

A *neurosis* is a functional disturbance of the nerve-centers, whose pathology is not positively known.

CHOREA.

Synonym.—St. Vitus's dance.

Definition.—A functional nervous affection, manifesting itself by a series of involuntary, arhythmical, spasmodic, muscular movements affecting one or more groups of muscles.

Etiology.—It is most commonly found in children, and is caused by reflex irritations, fright, masturbation, worms, genital defects, intestinal parasites, painful dentition, and direct injury. Rheumatism produces many cases. It seems to be hereditary in some families. Female children are more frequently affected than male. It has appeared as an epidemic among ignorant classes who were susceptible to great mental impressions, and is termed *hysterical chorea*.

Symptoms.—*Gradual onset.* Child cannot remain still in one position for one minute, but is constantly fidgeting about. Among many movements is a peculiar jerking of the head; distortion of expression; spasmodic closure of eyelids; opening the mouth; protruding the tongue; oscillation of the eyeballs (*nystagmus*); jerking of arms and legs; spasmodic closure of hands; and spasmodic speech. In fact, every effort is made spasmodically. Child often utters peculiar cries or certain favorite expressions, and has a very excitable temperament. Urine or fæces may be voided involuntarily in severe cases. Choreic movements continue at all times when the patient is awake; are always aggravated by motion or excitement; and usually absent during sleep. In mild cases these movements

can be controlled by an effort of the will. Mental state is lowered. Increased electrical excitability. Sensations are usually normal. Heart is irregular, tumultuous, and gives a systolic murmur at the apex in more than half of the cases. The severer forms ultimately terminate in paralysis and insanity. Choreic children always have a great desire for masturbation, and very excitable genital organs.

Chorea may be of all grades, from the slightest muscular contraction to the most violent, in which the patient can neither stand, talk, nor accomplish voluntary motion. *Hemichorea* is an affection confined to one side of the body.

Pathology.—No distinct pathological lesion has ever been differentiated. It is undoubtedly due to some irritation of the central nerve-centers, but the how, where, and when are questions for future pathological investigation.

Diagnosis.—See table, *Paralysis Agitans*.

Prognosis.—If the exciting cause can be removed, the disease subsides quickly under proper attention. Neglected cases become worse and may ultimately terminate in paralysis, insanity, or chronic chorea. Confirmed masturbation always leads to an increase of the trouble, and saps both physical and mental strength. In heart-lesions the prognosis is rather unfavorable.

Treatment.—*Cause.*—Inquire carefully into the history of the case, and *never neglect a thorough physical examination of every organ in the body.* Remove every possible cause, and bring into activity the whole secretory and excretory system. Absolute physical and mental rest is imperative. *Masturbation must be prevented, regardless of the measures necessary.* Patients of this class should never be frightened, excited, or made the subject of ridicule. Nutritious diet suited to the digestive powers.

Medicinal Treatment.—Administer hypnotics at night if

sleep cannot be obtained. Liq. potassii arsenitis, ℞ iii-v, after meals, gradually increased to the point of tolerance, is the most common remedy used. Zinc salts, given three times daily, are advised by some. Hyoseyamus, cimicifuga, iron, and antispasmodics. Acetanilide, phenacetin, and antipyrin are new remedies used. Strychnina or ignatia will benefit some cases. Massage, salt-water baths, and electricity. Mild cases should be controlled by the influence of the will as far as possible. Treat complications.

EPILEPSY.

Varieties.—1. Epilepsy major, *haut mal* or *le grand mal*; 2. Epilepsy minor, *le petit mal*, abortive epilepsy or epileptic vertigo; 3. Jacksonian or partial epilepsy.

Definitions.—*Epilepsy major* is a sudden, complete loss of consciousness and coördination, accompanied by tonic or clonic muscular convulsions, of short duration, and tends to recur at irregular periods of time.

Epilepsy minor is a slight, temporary loss of consciousness without loss of coördination, occasionally accompanied by tonic or clonic muscular contractions.

Jacksonian epilepsy is a temporary tonic or clonic spasm of one or more groups of muscles on the same side of the body, without loss of consciousness, and recurs at irregular intervals.

Etiology.—Inherited. Patients with cerebral tumors, chronic meningitis, fractures of the skull, syphilis, and nervous disorders are often affected with one of the varieties of epilepsy. No distinct cause has been found.

Symptoms.—*Epilepsy Major.*—Immediately preceding the attack, and lasting from a few seconds to a few minutes, is the *epileptic aura*. This consists of various sensations in

different persons. A hot or cold wave seems to spread gradually from the tips of the fingers or toes to the whole body; sensations of tingling or numbness extend from the extremities; strange feelings about the abdomen or chest; and the appearance of certain peculiar visions.

Immediately following the aura is a sudden loss of consciousness, usually preceded by a *characteristic cry*, and the patient falls very hard, if standing, and is often seriously injured. Skin is pale and cold, and muscles are in a state of tonic contraction for a few seconds or minutes. Clonic convulsions soon follow. The thumbs are pressed firmly into the palms. Tongue is often severely bitten. Conjunctivæ are absolutely free from sensation, and the pupils do not respond to light during the attack. Saliva is blown from the mouth like foam. Following the attack is a condition of drowsiness, stupor, or coma, which lasts from five minutes to several hours. Pulse rather full and slightly accelerated. Respiration is deep, full, and labored. Consciousness returns gradually; intellection is dazed for a time; quite nervous; skin is cold and pale, and covered with cold sweat. Headache follows an attack. Albuminuria is not uncommon.

Epilepsy Minor.—A person during conversation or at work will be seized by a sudden loss of consciousness, with rigidity, or, possibly, a slight twitching, of one or more groups of muscles, lasting for a few seconds only, when he resumes his work or conversation where he stopped, usually unconscious of the attack. Occasionally the sensation is only that of a passing dizziness. These patients rarely fall or cry out. There is no aura. Headache, weakness, or nervousness follows.

Jacksonian Epilepsy.—Some authors question the propriety of classing this phenomenon as epilepsy, but the main symptom consists of irregularly recurring clonic convulsions that

affect one or more groups of muscles, always on the same side of the body, without the epileptic aura or loss of consciousness. An attack lasts from one to fifteen minutes or longer.

General Considerations.—Epileptic patients are usually anæmic, nervous, inactive, and intellectually dull. They are irritable, quick-tempered, and often demented. Occasionally one meets with an epileptic who is apparently in perfect health. The attacks come at irregular intervals, according to the exciting conditions. They may occur many times in one day, weekly, monthly, or yearly. Every convulsion tends to increase the difficulty.

Pathology.—Epilepsy is classed as a nerve-storm, and is dependent upon some peripheral or central exciting cause. No definite pathological lesion has yet been found; hence the pathology is uncertain.

Diagnosis.—*Malingering.*—Rarely injure themselves when falling, and do not bite their tongue; skin is natural in color; conjunctiva is sensitive, and pupils respond to light; can be made to sneeze by blowing snuff into the nostrils or tickling the nose with a feather; reflexes are unimpaired, and there is sensibility to pain.

Hysterical epilepsy is characterized by violent muscular action and resistance when held; rarely bite the tongue or injure themselves in falling; duration is longer than true epilepsy; sensibility is little impaired; pupils react to light; and patient is of an hysterical temperament.

Prognosis.—Epilepsy, in a small percentage of cases, is curable. Hereditary epilepsy usually persists through life. Surgical operations may prove efficacious in some cases. Rarely fatal *per se*, but death may be caused by injury in falling. The mental condition gradually grows worse in severe cases. Convulsions sometimes disappear for years and then return.

Treatment.—*During a convulsion*, nothing can be done except the prevention of personal injury. Something soft—a block of wood, or cloth—should be forced between the teeth and held there to prevent biting the tongue. Lay patient flat on the floor and remove any clothing that may impede respiration. See to it that false teeth do not remain in the mouth. Cold water applied to the head often facilitates a return of voluntary functions. Inhalations of ammonia, amyl nitrite, and camphor are of little use except at the commencement of the aura.

Preventive.—Remove every abnormal condition if possible. Forbid the use of tobacco in any form, masturbation, and all excesses. Give best diet, bring into activity every gland in the body, and endeavor to establish a normal physiological condition. Search for and remove all possibility of intestinal parasites. In anæmia, give tonics of iron, arsenic, and strychnine.

Rx

Acidi arseniosi.

Strychninæ sulphatis..... āā. gr. $\frac{1}{60}$.

Ferri redacti gr. ij.

Ext. belladonnæ..... gr. $\frac{1}{10}$.

Misce. Fiat in pil. No. 1. Signa. One after each meal, continued for several weeks or months.

The bromides, in doses of twenty to thirty grains, three or four times daily, are the favorite remedies to abort or prevent convulsions. They must be given for weeks and months to be of efficacy. Great harm may result from their prolonged administration, and their effects must be watched closely. When the aura begins in one of the extremities, the convulsion may be avoided by tightly constricting the member near the body. Salts of zinc, copper, silver, nickel, bella-

donna, hyoseyamus, and many other remedies are recommended in varying doses. Change of climate will occasionally influence some cases favorably. Electricity.

Minor and Jacksonian epilepsy are treated on the same general plan as epilepsy major.

HYSTERIA.

Description.—Hysteria is a functional nervous disease confined principally to women, and manifests itself by different nervous phenomena. Hysterical patients are usually of a very excitable temperament, and often inherit their predisposition. One attack predisposes to another. During the intervals the patient may be in perfect health and rational; or there may be a constant irritability of temper and the special senses. Anger, excitement, worry, grief, fatigue, fright, injury, or sickness, all give rise to attacks. Ovarian and womb diseases are accountable for many cases.

Hysterical attacks assume various forms. There is always a complete loss of self-control. They cry, laugh, moan, scream, or have wild delirium, but are always conscious of what is going on around them and desire sympathy. They often resort to various means of simulating certain general or skin diseases, as by applying or taking drugs. Anaesthesia or hyperaesthesia of certain portions of the body, intolerance of noise, light, or certain odors, are common manifestations. Dyspnoea, aphonia, and temporary paralysis of one or more groups of muscles, without disturbance of the electrical reactions. Sometimes they assume a state of catalepsy or trance. Irregular tonic or clonic convulsions occur at long or short intervals. Headache is quite common. The *globus hystericus* is a sensation produced in the throat and œsophagus by the supposed presence of a lump or ball

that "moves up and down and is about to strangle" them. In short, there is no known condition that hysterical subjects will not simulate.

Pathology.—No definite pathological lesion has been found. Many cases are caused reflexly by ovarian and womb troubles; others are caused by unbalanced mental equilibrium; while many are entirely inexplicable. It seems to be a nerve-storm. One writer says: "It is simply a manifestation of satanic influence entirely beyond the control of the will of the subject."

Diagnosis.—Most cases recover in time, with or without treatment. Marriage and the birth of children cures some cases. Death may ensue from a prolonged attack. Insanity, with homicidal and suicidal tendencies, terminates a small percentage of the cases.

Treatment.—Examine your patient thoroughly, and remove every trace of disease if possible. Institute the very best hygienic, moral, and psychical surroundings, and stimulate the general glandular system to activity. No definite rules can be given for treatment. Each case must be dealt with according to its indications. Sympathy and kind treatment may answer best in some cases, while others demand nothing but harsh, severe treatment.

Absolute isolation and a diet of bread and water is specific with many. A sudden bath of ice-cold water often brings about a rational condition most effectually. Corporal punishment is occasionally demanded with young girls. Electricity and massage. Valerian, asafoetida, and other antispasmodics will often prevent attacks.

Do not administer morphina, but have recourse to the anæsthetics if necessary. When food is refused, administer it forcibly per rectum or with the stomach-tube—one or two such treatments will suffice. It is absolutely necessary for the physician and the nurse to impress the patient with the fact that

you mean business, and that they must be dealt with with an unswerving hand—otherwise treatment is most unsatisfactory.

THOMSEN'S DISEASE.

Description.—This rare disease, whose pathology is still a question of uncertainty, is characterized by a sudden rigidity of one or more groups of muscles whenever voluntary motion is first attempted after a long or short period of rest. It lasts but a few seconds and then permits voluntary motion. Every attempt to get up, run, walk, or act quickly is always preceded by this rigidity of the muscles. Excitement, cold, fright, and fear aggravate it. It is often hereditary, and affects the extremities principally. No lesion of the nervous system has been discovered. The muscles are slightly hypertrophied, and respond rather slowly to the galvanic current. Muscular hypertrophy is probably caused by the excessive rigidity and muscular activity rather than the disease itself. It is rarely fatal, and may continue for years.

Treatment is entirely symptomatic and empirical. It is sometimes called *congenital myotonia*.

NEURALGIA.

Definition.—Neuralgia is a functional disease characterized by pain along the course and distribution of one or more sensory nerves, and must be differentiated from the pain produced by definite pathological conditions of the nerve sheaths, trunks, and centers.

Etiology.—Most common among young adult females and in middle life. There is a peculiar nervous diathesis that is hereditary in some families, which accounts for many obstinate

cases. All forms of nervous complaints, gout, rheumatism, anaemia, debility, ocular defects, fatigue, excitement, improper exercise and food, and close confinement predispose to neuralgia.

Among exciting causes are exposure to cold and wet, reflex irritation from carious teeth, inflammation of the uterus, metritis, malaria, syphilis, alcoholism, and metallic poisons.

Symptoms.—Neuralgia is sudden in onset, and usually confines itself to one group of nerves and their area of distribution. There is no fever, redness, nor swelling at first. Preceding an attack the skin is often anæsthetic for several hours. The pain intermits and remits, at times being sharp, shooting, and lancinating, and again dull, boring, or aching. In old chronic cases or prolonged acute cases *tender points* are found along the course of the nerves, usually at the points of exit through bony or fibrinous foramen. The duration of an attack varies from a few hours to several days or a week. During and following an attack, the skin covering the area of distribution of the affected nerve is sore and sensitive to pressure. Trophic changes are liable to occur in severe or prolonged cases, such as altered secretions, congested capillaries, falling of the hair and change of its color. The special symptoms of neuralgia vary according to each group of nerves involved.

Trifacial neuralgia (*tic-douloureux*) involves one or more of the three divisions of the fifth cranial nerve, and is one of the most common forms. When the *first or ophthalmic division* is involved, pain is most severe in the forehead, eyelids, eye, and side of the nose. There is increased lachrymation, and discharge from the nose of a thin, watery character. Tender points are found at the supra-orbital foramen, side of the nose, and on the eyeball. The *second or superior maxillary division* causes pain in the cheek, nose, upper teeth, and jaw, and pre-

sents tender points on the malar bone, nose, and superior maxillary bone. The *third or inferior maxillary division* refers pain to the inferior maxillary bone, temporal and parietal regions, ear, and tongue, with tender points at the inferior dental foramen, on the zygomatic arch, and in front of the ear.

Cervico-occipital neuralgia is sharp, shooting, continuous, often bilateral, and extends from the neck to the occipital regions, to the cheeks, and down the neck to the clavicles. This form is usually excited by carious teeth or exposure to cold.

Cervico-brachial neuralgia produces paroxysms of pain in the fingers, arms, scapular region, the back and side of the neck. There is a tingling, numb feeling in the arm and hand, as if "asleep."

Intercostal neuralgia occupies the distribution of the intercostal nerves, and is usually accompanied by a vesicular eruption called *herpes zoster*.

Lumbo-abdominal neuralgia manifests itself by paroxysmal pain in the lower part of the abdomen, back, iliac regions, scrotum, and anterior aspect of the thighs. Herpes is occasionally present. Caused by malarial poisoning.

Sciatica, usually classed as neuralgia, is considered separately as an inflammatory affection. (See p. 368.)

Pathology.—The pathological process involved in neuralgia is a question of doubt. It is undoubtedly a functional disease primarily, but is soon complicated by neuritis and allied troubles.

Diagnosis.—Absence of all organic lesions or obstructions; sudden, sharp, shooting, paroxysmal pain; tender points along the course of nerve; absence of fever and inflammation; usually confined to the distribution of one set of nerves; trophic changes; and, in chronic cases, a peculiar nervous diathesis.

Prognosis.—If promptly treated, the majority of cases recover, but relapses are quite common. Chronic cases afford

discouraging prospects for permanent results, although many are benefited temporarily.

Treatment.—In every case seek for the cause, and, if possible, remove it. Such reflex causes as carious teeth, metritis, gastritis, and allied disorders must be treated. Anæmia, syphilis, debility, and alcoholic excesses require appropriate treatment before permanent results can be obtained. The very best, most nutritious diet must be given. Cod-liver oil in the weak and anæmic, provided it can be digested. Tonics of iron, quinine, phosphorus, and strychnine are the best remedies for chronic cases.

R

Resinæ phosphori.....	gr. $\frac{1}{60}$.
Strychninæ sulphatis.....	gr. $\frac{1}{40}$.
Quininæ bisulphatis.....	gr. ij.
Ext. belladonnæ	gr. $\frac{1}{4}$.
Acidi arseniosi	gr. $\frac{1}{20}$.

Misce. Fiat in pil. No. 1. Signa. One pill three times daily for two weeks, then drop the phosphorus and continue with the rest of the prescription for one week, only to resume the phosphorus again for the next two weeks, and so continue for months.

During the paroxysm, order your patient to lie down quietly in a dark room, and administer a pill of acetanilide, quinine, and cocaine every fifteen or thirty minutes until relieved. (See formula, p. 27.)

Phenacetin may be given in doses of one to ten grains. Antipyrin, given in five-grain doses, although it will sometimes relieve a paroxysm, should be used with great caution. Trinitrin (one-percent. sol.), gtt. j. every hour, will often relieve obstinate cases. Aconite and belladonna, given in combination, are useful. *Morphina must be given only after all*

other remedies fail. Counter-irritation with mustard, blisters, liniments, heat, or cold, over the painful points, will produce great relief.

A mild current of galvanic electricity, properly applied, is one of the most certain curative measures at our command. Place the *positive pole* over the painful spot and the *negative pole* over some neutral point, and pass from two to five milliamperes for five or twenty minutes. Repeat as often as necessary. Surgical measures have been resorted to, such as neurotomy, neurectomy, and nerve-stretching, with varying degrees of success.

MIGRAINE.

Synonyms.—Megrin; sick-headache.

Description.—Migraine is dependent upon many causes. It is frequently hereditary in nervous and gouty families; most common in young adult females who lead sedentary lives and are surrounded by improper hygiene. Indigestion, constipation, eye-strain, anxiety, grief, fright, fatigue, and defects of vision predispose and excite paroxysms.

Onset is usually preceded by one or more sensory symptoms, viz., dimness of vision; floating, bright spots before the eyes; tingling sensations in the arms, hands, feet, face, and tongue; *aphasia* in severe cases; temporary, partial paralysis; and a sense of general uneasiness and restlessness—frequently fear of impending death.

Accompanying or following these sensory impressions is *headache*, which varies from a dull, heavy feeling in the head to a very sharp, throbbing pain, mostly on one side of the head (*hemicrania*). Occasionally the pain centers in the eye, temple, ear, or forehead, and is increased by motion, noise, and excitement. Face is pale; skin cold and clammy; pulse

feeble and slow: but the contrary conditions may exist in certain cases. Lachrymal and salivary secretions are often greatly increased.

Migraine is periodical in its course, and may appear daily, weekly, monthly, or at any uncertain period. It is rarely dangerous, and may in time be replaced by attacks of epilepsy, asthma, or some other nervous affection.

Vomiting is characteristic: consists of bilious material; is most common during the height of the paroxysm; and followed by temporary or permanent relief.

During the intervals, patient is in perfect health, or may suffer from slight headache and nervousness.

Treatment.—*During a paroxysm*, lie in a dark and quiet room, with cold compresses to the head. Vomiting will prevent analgesic drugs from acting, and it is well to administer as much warm water as can be taken, to cleanse the stomach of bile and food. After this, admirable results are obtained by giving:

R

Cupri arsenitis	gr. $\frac{1}{16}$.
Tr. nucis vomicæ	f 3 ss.
Aquæ	f $\frac{3}{4}$ iv.

M. Signa. One teaspoonful every ten minutes until relieved.

Pill acetanilide comp. (form, p. 27), every half-hour; full doses of phenacetin, acetanilide, sodium salicylate, or bromides, if retained, afford prompt relief. Trinitrin, in certain cases, is very good. *Avoid opium and its preparations.*

During the interval, break up sedentary habits; correct constipation and indigestion; carefully regulate diet according to individual requirements; correct all defects of vision; insist

on daily exercise in the open air; attend carefully to hygiene. Administer tonics of iron, arsenic, strychnine, cod-liver oil, and others, as indicated in neuralgia; attacks can frequently be averted by rest in bed and full doses of phenacetin, acetanilide, quinine, bromides, or the prescription given above.

PARALYSIS AGITANS.

Synonyms.—Shaking palsy; Parkinson's disease.

Definition.—A disease of old persons, recognized by constant rhythmical contractions of the muscles of the extremities, head, and neck, partially under the control of the will, absent during sleep, and increased by excitement or physical exertion, together with weakness and rigidity of the muscles.

Etiology.—Begins after the fortieth year, and is more frequent among men than women. No distinct cause can be determined, although it often dates from a severe fright, nervous shock, injury, exposure, or some acute disease.

Symptoms.—*Onset* is slow and begins in one or more groups of muscles, causing alternate flexion and extension of the fingers, wrist, arm, leg, or parts affected. These contractions average from five to eight in a second; gradually spread to the corresponding parts on the other side of the body, and may finally involve most of the voluntary muscles. At first they can be controlled temporarily by an effort of the will, but otherwise continue during the hours of waking, and are absent during sleep. Speech is not affected; writing is irregular and characteristic; nystagmus is absent.

Muscular weakness and rigidity precedes, accompanies, or follows the trembling; grasp of the hand is weak; and every slight effort causes excessive fatigue and profuse sweating. Muscular movements become slow and difficult; the muscles assume a rigid form, without hypertrophy, and when patient

begins to walk he either stumbles until he falls or is unable to stop or turn without assistance; equilibrium is easily lost.

Complete paralysis is the ultimate result in two to twenty years. Complications are bed-sores, headache, vertigo, diseases of the lungs, and exhaustion. No pathological process or lesion is demonstrable. Recovery is the exception.

Diagnosis.

PARALYSIS AGITANS.	CHOREA.	MULT. SPINAL SCLEROSIS.
A disease of old age.	Disease of childhood.	Adults or children.
Rhythmical movements.	Arhythmical, spasmodic movements.	Irregular movements.
Speech unaffected.	Natural or spasmodic.	Scanning speech.
No nystagmus.	No nystagmus.	Nystagmus.
Movements slightly increased by motion.	Movements increased by motion.	Great increase of movements by motion.
Can take food and drink without aid.	Can take food and drink without aid.	Unable to drink from a cup without spilling.
Constant movements during waking hours.	Movements not constant; irregular.	No movements except during voluntary exertion.

Treatment.—Entirely symptomatic, for no known remedy will cure. Barium, arsenic, iron, and strychnine have been used, but the improvement noted in a few cases may have been a coincidence, as the disease often ceases spontaneously without treatment. Galvanism and faradism may be beneficial. If movements become very painful, administer sedatives. Institute best diet and hygiene. Treat all complications. M. Charcot has devised a mechanical chair and helmet which, by a series of rapid vibrations, is used in treating these cases. Great relief is afforded; the trembling disappears or is reduced temporarily; the muscular stiffness ceases.

NEURASTHENIA.

Description.—Neurasthenia is a deficiency or exhaustion of nerve-force, together with debility of the nervous centers, manifesting itself in both sexes. It is caused by prolonged excitement, worry, study, family and business troubles, prolonged sickness, fright, traumatism, indigestion, inheritance, excessive venery, alcoholism, and the use of narcotics.

Such persons find their power of endurance and concentration of thought impaired; trifling things worry and irritate them; they become fretful, dissatisfied, irritable, cross, or tyrannical; hysterical or hypochondriacal; have headache and insomnia; start up from sleep; general nervousness; loss of appetite, and suffer from indigestion; emaciation slight or marked; constipation; general anemic and sallow complexion; and a peculiar, piercing, sharp eye.

Tender points are often found along the spine, with sharp or dull tingling pains along the course of one or more nerves. Temporary or permanent paralysis may result. Neurasthenia is functional in character, and entirely beyond the control of the will. There is a tendency on a neurasthenic's part to conceal the trouble until the very last moment. Recovery is the rule.

Treatment.—Absolute rest and freedom from business and family cares, with an endeavor to take the patient's mind off himself and keep it occupied with some light and amusing thoughts. Never allow him to converse or dwell upon his ailments or trials. Diet must be light, nutritious, and suited to his power of digestion. Let him feel that you are doing something and are interested in his case, for a good mental impression is nearly as good as drugs.

Absolutely avoid opium and use a minimum amount of seda-

times, for they are temporary in their action and followed by bad results and habits. A season at some chalybeate or other mineral spring, under the care of a physician, is often curative. Galvanism, faradism, and massage all play important parts as curative agents. Exercise judgment in the administration of tonics, as each case will require special study and medicinal treatment suited to it.

WRITERS' CRAMP.

Synonyms.—Writers' palsy; graphospasm; mogigraphia.

Definition.—A temporary or permanent, partial or complete paralysis of the muscles of the fingers, hands, and wrist, with incoördination, occurring in those who use these muscles for a prolonged period of time.

Etiology.—More common in men from eighteen to fifty, from the fact that they are more frequently employed at the work that predisposes to it, and especially so if there is a history of hereditary nervousness. May be caused by a local injury to the muscles or nerve-trunk, but usually comes from prolonged use and over-exertion of a group of muscles by writing, telegraphing, type-writing, piano-playing, or fine work.

Symptoms.—*Onset* is slow, manifesting itself first by a tired feeling in the muscles of the fingers, wrist, and arm: this is replaced by stiffness and a slight aching, until finally the muscles contract painfully, cause irregular writing, and may produce a tonic or clonic spasm of the muscles which will last several minutes. Rest for a short time affords temporary relief, but it soon returns if work is resumed. Electrical reaction is not usually affected. Pain may be neuralgic in type. Certain cases manifest themselves only by tremor during efforts to use those particular muscles.

Treatment.—*Preventive.*—If compelled to do much writing, use finger, wrist, and arm movements at alternate intervals, to avoid prolonged use of one group of muscles. If possible, use a type-writer for a time. Always avoid a tight grasp on a pen or any other instrument.

Active Treatment.—*Absolute rest of the affected muscles* is the only certain process of cure. All proposed methods of holding and using the pen are but temporary expedients and of little avail in the end. *Active massage* of each muscle, galvanism, and inunctions of hot olive-oil are most beneficial. If neuritis is present, treat as indicated. Build up the general system with tonics and proper food. Always warn your patients that relapses are quite common if their old habits are resumed. First of all learn the *proper* method of caring for your own muscles, then instruct your patients.

DISEASES OF THE NERVES.

NEURITIS.

Definition.—*Neuritis* is an inflammation of a nerve-trunk, recognized by pain, loss of power, redness and tenderness along its course.

Perineuritis is an inflammation of the nerve sheaths and coverings, with manifestations similar to those of neuritis.

Etiology.—Traumatism; exposure to damp and cold; extension from other parts; chemical causes; secondary to acute diseases, such as rheumatism, variola, diphtheria, syphilis, and lead-poisoning.

Symptoms.—*Onset* is slow or sudden. Begins with a numbness and tingling sensation in the area of distribution of the nerve. This is soon followed by occasional neuralgic pains and a dull, boring, tingling pain, increased by motion and pressure. Slight fever may develop in a few days, and continue for an indefinite period. Painful, spasmodic contractions of the muscles supplied by the affected nerves may occur; muscular power is diminished, and, in prolonged or chronic cases, may be entirely lost (*paresis*). In the superficial nerves there is a glossy redness along their course; the nerve is prominent and swollen like a hard cord, and small vesicles form over its course and area of distribution. As a late symptom, atrophy of the muscles results.

Electrical Reactions.—Faradic irritability is rapidly dimin-

ished and lost in about two weeks. Galvanic irritability is first diminished, then greatly increased, and remains so for a long time before it is finally lost (*reaction of degeneration*).

Pathology.—Inflammation of the true nerve structure is rarely well marked, for the nerves are not very vascular. It most commonly involves the sheaths of the nerves and intercellular structures; causes proliferation of cells and exudation of leucocytes; gives rise to new inflammatory tissue which presses on the nerve structure, and causes its atrophy and destruction. By this pressure and destruction of nerve substance, nervous impressions are improperly conveyed and delayed by broken axis-cylinders and atrophied nerve-cells—hence a diminution and loss of sensory and motor impulses. As in other inflammatory affections, it extends along the nerve toward the central structures, and ultimately involves them (*neuritis ascendens*); or extends to the peripheral filaments (*neuritis descendens*). In chronic cases, nothing may remain of the original nerve but a fibrous cord, with here and there a few degenerated and atrophied nerve-cells.

Neuritis varies in character according to the nerves involved, each separate nerve presenting its own characteristic symptoms. In the encephalic nerves there may be a loss of sight, smell, taste, and motion, or permanent loss of physiological action of the parts involved.

Prognosis.—Traumatic and acute cases generally terminate favorably in one to eight weeks. Permanent paralysis may result. Prognosis should always be guarded.

Treatment.—Remove cause if possible. Put the parts at absolute rest, with bandages and splints if necessary. Hot applications along the affected nerve are most desirable; cold may be more efficient and soothing in certain traumatic cases. If pain is very severe, give hypodermic of morphia. Establish free action of the emunctories by cathartics and diaphoretics;

give light, nutritious diet. Local blood-letting may be very efficient. When cases do not respond to this method, apply isolated blisters, sinapisms, or liniments at different points along the nerve-trunk over the seat of pain. Avoid electricity during the acute stages.

Chronic neuritis requires alteratives and absorbents—full doses of iodides and mercury; counter-irritation and galvanism. Strong currents must not be used except in prolonged chronic cases. Place the anode over the tender spot and move the kathode along the nerve for ten or twenty minutes.

MULTIPLE NEURITIS.

Synonyms.—Polyneuritis; disseminated neuritis; peripheral neuritis.

Definition.—A disease in which a number of nerves become inflamed at the same time, recognized by high fever, general aggravation of all symptoms of simple neuritis in the extremities, and is usually symmetrical.

Etiology.—Most common in middle life from alcoholism; lead-poisoning and toxic poisons; syphilis; specific diseases; eruptive diseases; tuberculosis; rheumatism; gout; leprosy; and septic infection. It may occur without any perceptible cause. Often follows or complicates epidemic meningitis.

Symptoms.—Begins with a numbness, slight tingling and pricking sensations in the extremities, increased by pressure and motion. Numbness soon becomes pronounced in the fingers and toes; muscular action is weak. Severe paroxysmal muscular cramps occur at intervals. Walking is very painful, unsteady, and, in some bad cases, impossible. The floor feels soft and yielding. Pulse is quick and excited; temperature may run to 105° F. in the early stages of acute

cases. Paralysis extends from the periphery toward the center; extensor muscles are more affected than the flexors; laryngeal paralysis; loss of reflexes; muscular atrophy; reaction of degeneration. There is tenderness, redness, and swelling along the course of the nerves, and often a vesicular eruption. Trophic changes are marked; bed-sores common; arthritis and fixation of the joints; gradual affection of the mind, delirium, and general incoördination may complicate.

Prognosis.—It is a very slow, tedious disease, prone to frequent relapses, and often terminates fatally during its early stages, from involvement of the diaphragm, heart, and respiratory muscles. Alcoholic cases are unfavorable. Partial or complete recovery may occur in two to twelve months.

Treatment.—Treat on the same general principle as in simple neuritis, directing remedies toward the cause. Alcohol must be avoided. Narcotics may be necessary to control severe pain. During convalescence, give most nutritious, albuminous diet, and tonics suitable to each individual case.

SCIATICA.

Definition.—An inflammatory affection of the great sciatic nerve-trunk or its surrounding structures, recognized by extreme neuralgic pain along its course and distribution, and accompanied by slight constitutional symptoms.

Etiology.—Exposure to cold and damp; acute rheumatism; direct injury; extension from other parts; pressure on the sciatic nerve by tumors, cicatrices, and adhesions; predisposition by heredity. More common in men.

Symptoms.—Begins with a stiff, tired feeling in the back, hip, and leg on one side (both sides may be affected), followed by a numb, pricking, tingling pain along the sciatic nerve.

Pain increases, is dull, boring, and aching, and every effort to move causes sharp, neuralgic pains, most marked in the hip, back of the thigh, and knee. Leg is flexed on the abdomen—this is the most comfortable position to them. Tenderness exists along the sciatic nerve, most marked at the back of the trochanter, popliteal space, side of the leg, and foot.

There may be slight fever; irritability; constipation; and anorexia. Electrical excitability is not materially changed. In long-continued cases there are atrophy of the muscles, paralysis, reaction of degeneration, and trophic changes.

Pathology.—*Sciatica* is not neuralgic in origin, but has the pathological lesions of neuritis or perineuritis. Adhesions form between the nerve trunk and sheath in very acute and chronic cases, producing pain and interference in the motion of the parts. Atrophy of the nerve-tissue occurs in prolonged cases.

Diagnosis.—*Neuralgia* has tender points only; sharp, shooting pains; very slight anæsthesia; no paralysis; no atrophy of the muscles; more paroxysmal in character; electrical reactions not diminished; no fever.

Myalgia or muscular rheumatism has no tender points; is confined to a group of muscles; has no lancinating pains; is not greatly increased by motion; is relieved some by pressure.

Prognosis.—Very favorable in acute cases. Chronic cases are obstinate, easily aggravated, and prone to relapses.

Treatment.—*Acute Sciatica.*—Rest in bed in recumbent position, with the leg slightly flexed and supported by pillows. If pain is severe, administer a hypodermic of morphina and atropina, but do not repeat it. Chloroform, injected deeply over the sciatic nerve, is very efficient for pain. Hot applications, sinapisms, and blisters over the sacro-sciatic

region. Begin treatment with a free saline cathartic, and follow with:

R

Ext. cascariæ sagradæ fluidi..... f 3 v.

Sodii salicylatis f ʒ j.

Aquæ aurantii flor.....q. s. ad. f ʒ iv.

M. Signa. One teaspoonful every four or six hours.

Full doses of acetanilide, phenacetin, and salicylates give temporary relief.

When acute symptoms subside, and it tends to become *chronic*, administer colchicum, iodides, or mercury for a long period. Nerve-stretching, by forced flexion of the leg on the abdomen, will often break adhesions. Galvanism. Acupuncture of the nerve at the sacro-sciatic foramen is practiced by some.

FACIAL PARALYSIS.

Synonym.—Bell's palsy.

Definition.—A partial or complete loss of power of motion in the voluntary muscles of one side of the face which are supplied by the facial nerve (seventh cranial or portio dura nerve).

Etiology.—Pressure of tumors on the nerve-trunk at the base of the brain; extension of inflammation from meningitis, causing neuritis or perineuritis; injury to the petrous part of the temporal bone, through which the nerve passes; exposure to cold and wet. Secondary to certain acute diseases—rheumatism, diphtheria, and syphilis.

Symptoms.—*Onset* is sudden or slow, with a feeling of numbness, tingling, or pricking on the affected side; facial muscles feel weak and drawn, and cannot be used freely. Complete loss of muscular power on the affected side soon

follows, and the face assumes a typical appearance, with an entire lack of expression on the one side. Mouth cannot be properly closed, and the corner droops.

Eyelids are relaxed, half closed; epiphora; and dryness of the cornea. The whole face appears drawn toward the unaffected side; tongue is protruded to one side; deglutition is often impaired; tinnitus aurium; reflexes abolished. *Electrical reactions*: faradic excitability is soon lost; galvanic excitability is first increased, then diminished, and finally lost (reaction of degeneration).

Prognosis.—Uncomplicated acute attacks recover in a few days or several weeks. Chronic cases depend upon central or structural lesions, and are unfavorable as to cure.

Treatment.—*Acute cases* require rest in bed; free diaphoresis; blisters, leeches, or hot applications over the mastoid process of the temporal bone and in front of the ear. Aconite and belladonna to relieve over-active circulation. Treat rheumatic troubles as indicated.

Chronic cases do best under the use of alteratives, hydrargyrum, and iodides. Galvanism is indicated when all acute symptoms have subsided. Massage may prove beneficial. Good, nutritious diet.

DISEASES OF THE SPINAL CORD AND ITS MEMBRANES.

SPINAL MENINGITIS.

Varieties.—(1) Acute spinal meningitis or acute leptomeningitis spinalis; (2) chronic spinal meningitis or chronic leptomeningitis spinalis; (3) pachymeningitis externa and interna.

(1) ACUTE SPINAL MENINGITIS.

Definition.—Acute spinal or *leptomeningitis* is an acute inflammation of the pia mater and arachnoid, recognized by pains in the back, motor and sensory disturbances of the nerves involved.

Etiology.—Exposure to cold and dampness; traumatism; rheumatism; acute diseases; extension from other parts. It is associated with acute, epidemic cerebro-spinal meningitis.

Symptoms.—*Onset* may be sudden, with a chill or rigor, or may begin slowly with rise of temperature; localized or general severe pain along the spinal column, which is increased by motion, deep pressure, and percussion. Sharp, shooting, tingling pains are reflected along the nerves arising from the affected area, and that portion of the skin which is supplied by them is hyperæsthetic. Violent muscular spasms may occur, causing opisthotonos, emprosthotonos, pleurosthotonos, or orthotonus.

Reflexes are increased. Constipation; occasional retention of urine; a girdle sensation around the body. On the second to fourth day symptoms of pain lessen, and are replaced by anæsthesia, paralysis, and diminished or abolished reflexes. Galvanic and faradic reactions, although increased at first, are soon diminished or lost. Symptoms will vary according to the parts affected.

Pathology.—At first the pia mater and arachnoid are congested and red, but soon become inflamed, swollen, and covered with an opaque exudation which may become purulent. Adhesions form between the membranes, cord, and nerve-trunks. Swelling and inflammatory tissue cause pressure on the spinal cord and nerve-trunks, producing pain and all sensory and motor symptoms. The cord and nerves soon become inflamed, and the inflammation may spread to the cerebral meninges and nerve-sheaths.

Diagnosis.

MYELITIS.

Onset usually very slow.
Fever is slight, not typical.
Pains and muscular spasms not defined.
Sudden, complete paralysis and anæsthesia.
Pains little influenced by pressure and motion.
Cutaneous and muscular hyperæsthesia absent.
Convalescence is very slow.
Complications and sequelæ marked.
Obstinate bed-sores; alkaline urine and cystic troubles.

ACUTE MENINGITIS.

Onset usually rapid.
Fever is high and persistent.
Pains and muscular spasms well defined.
Paralysis and anæsthesia are early symptoms, but not complete until late.
Pains increased by pressure and motion.
Cutaneous and muscular hyperæsthesia well marked.
Convalescence more rapid.
No marked complications and sequelæ.
No obstinate bed-sores; cystic complications not marked.

Prognosis.—Must always be guarded. Greatest danger lies in extension of inflammation to the centers of respiration

and the heart. Recovery is usually accompanied by paralysis, partial or complete. Convalescence is slow.

Treatment.—Absolute rest in bed, lying on the side or stomach. Wet or dry cups over the affected area of the spine; applications of cracked ice. Administer a free saline cathartic and endeavor to establish diaphoresis and diuresis. Diet of beef-extracts, milk, farinaceous foods, toasted stale bread, and crackers. Avoid alcoholic stimulants and stimulating diet. If pains are very severe, administer morphina hypodermically, or give the bromides, acetanilide, or phenacetin. When the acute stage has subsided, administer mercury and iodides, with counter-irritation, galvanism, and massage. Stimulate as necessary.

(2) CHRONIC SPINAL MENINGITIS.

Etiology.—Acute inflammation may become chronic; it may pursue a chronic course from the first, from syphilis, exposure, traumatism, chronic myelitis, and acute or chronic diseases.

Symptoms.—No fever; muscular spasms and rigidity come on slowly, and are not as well marked as in the acute; localized and usually not general; paralysis comes rather early. Other symptoms are similar to the acute form.

Pathology.—Pia mater and arachnoid are thickened and filled with new fibrous tissue and inflammatory products. Adhesions between the membrane and cord are numerous and well defined. Pressure upon the nerve-trunks and spinal cord produces atrophy and inflammation of their structures, frequently causing myelitis or neuritis.

Prognosis.—Complete recovery is rare. It is obstinate to treat, and results are obtained slowly. Relapses are common. Localized permanent paralyses.

Treatment.—Causal if possible. Counter-irritation over the spine, in the form of blisters and sinapisms. Cups and leeches frequently applied. Full doses of the iodides and mercury. Attend closely to all physiological functions—prevent retention of urine and obstinate constipation. Galvanism and massage. Symptomatic treatment.

(3) PACHYMENINGITIS SPINALIS.

Description.—Pachymeningitis or inflammation of the dura mater is acute or chronic, external or internal. It is caused by an extension of inflammation from spinal caries, cancers, ulcers, and wounds; alcoholism and traumatism. The symptoms are similar to those of acute and chronic leptomeningitis. In *external pachymeningitis* the external surface of the dura mater is thickened, infiltrated, and may be covered with a layer of creamy pus.

Internal pachymeningitis affects principally the cervical region and involves the brachial plexus of nerves. The internal surface of the dura mater is thickened, infiltrated, red, and may be covered with a diffuse hemorrhage. The nerve-roots are compressed. Acute cases are moderately favorable, and the chronic will depend on the cause.

Treatment.—Treat as acute and chronic leptomeningitis. Remove every possible cause, such as carious bone, ulcers, and tumors. Evacuate pockets of pus promptly. Sustaining, nutritious diet and rest.

ACUTE MYELITIS.

Synonym.—Acute inflammation of the spinal cord.

Etiology.—Exposure to cold; shock; traumatism; general diseases; syphilis; compression; extension from other parts;

and great functional activity. More common in men and during young adult life.

Symptoms.—*Onset* may be sudden, with a chill, followed by a temperature of 102° to 104° F., and rapid pulse; or it may begin slowly with sharp, shooting, darting pains in one or more parts of the body, varying with the nerve-roots affected, together with a numb, tingling, jagging feeling. Parts soon become anæsthetic; girdle sensations about the chest or abdomen. *Paraplegia* develops suddenly or slowly in a few hours or several days; control of bladder and rectum soon lost; reflexes abolished; reaction of degeneration at first, but all electrical reaction is soon lost; dyspnoea; gastro-intestinal irritability; priapism; urine alkaline; occasional muscular cramps; trophic changes; and obstinate bed-sores. Symptoms vary with the part of the cord affected.

Pathology.—Inflammation of the structure of the spinal cord is diffuse or focal. *Diffuse myelitis* involves large areas of the cord, and is very rare. *Focal myelitis* is confined to small areas, and is the most common form. The affected part of the cord is enlarged and softened. On section, the small capillary vessels are congested and prominent; gray matter is quite dark. Microscopically, the nerve-fibers are broken up; axis cylinders are enlarged; nerve-cells are degenerated and destroyed; new fibrous tissue is formed, and a large amount of granular matter is present. The spinal membranes are usually congested and involved. When cases become chronic, a distinct condition of sclerosis exists.

Diagnosis.—See *Meningitis*, page 373.

Prognosis.—Very grave. Death is caused slowly or suddenly by paralysis of the muscles of respiration or of the heart; general exhaustion; cystitis and suppression of urine; pyæmia; and intercurrent diseases. Complete recovery is rare, as some complications and sequelæ almost invariably remain.

Treatment.—Rest on a soft, downy mattress or water-bed to prevent bed-sores. Dry or wet cups, blisters, sinapisms, poultices, or cracked ice, as indicated by each case. When due to cold, give free saline purge, diuretics, and diaphoretics during *first stage* only. Aconite, veratrum, acetanilide, phenacetin, or quinine may be beneficial if used early. Watch the bladder closely to prevent retention of urine. Full doses of iodides and mercury may be beneficial when the most marked acute symptoms subside. Treat all complications and follow general rules given for meningitis.

POLIOMYELITIS ANTERIOR ACUTA.

Synonyms.—Anterior cornual myelitis; acute spinal paralysis; atrophic spinal paralysis; essential paralysis of children.

Etiology.—Exposure to cold; dentition; spinal injuries; acute diseases; rheumatism; and exanthemata. Most common among children before the tenth year, but may occur in adults, when it is known as *acute spinal paralysis of adults*.

Symptoms.—*Onset* is sudden, with a chill, rigor, or convulsion, followed by moderate fever, which persists about one week. Occasional sensations of tingling and formication in the members supplied by the affected nerves. In a few days the power in one or more members is diminished and finally lost. Paralysis may involve both arms and legs. One peculiar characteristic of the disease is that one muscle or group of muscles may be paralyzed while the others are not affected. Those involved degenerate, atrophy, and show the reaction of degeneration; reflexes are also lost. The heart, muscles of respiration, bladder, and rectum are affected. Paralysis manifests itself in one group and rarely spreads to others.

The affected member is cold; circulation is poor; and growth retarded. Sensation remains unchanged.

Pathology.—The pathological lesion is an acute inflammation of the anterior cornu of the gray matter of the spinal cord. At first there is congestion, followed by true inflammation, formation of new connective tissue, transmigration of leucocytes, destruction and atrophy of motor nerve-cells and axis cylinders leading from them. Inflammation and degeneration extend along the motor-roots of the nerves leading from the affected area. An entire absence of motor nerve-cells is found in prolonged cases. Affected muscles are in a state of fatty and granular degeneration and atrophied.

Prognosis.—Rarely fatal *per se*, unless the lesion exists in the medulla. Death usually follows complications. Complete recovery is very rare.

Treatment.—Complete rest in bed until acute symptoms subside. Give aconite, liq. ammonii acetatis, or potassii citras for fever. Compresses of ice to the spine. Potassium iodide or syr. acidi hydriodici, every three or four hours, with infusion of digitalis. Institute best hygiene and feed regularly at intervals of four hours.

When acute symptoms subside, use weak galvanism, massage to the affected muscles, and administer strychnina in full doses. Use any mechanical devices to support and preserve the impaired members.

PARALYSIS ASCENDENS ACUTA.

Synonym.—Landry's palsy.

Description.—A disease described by Landry in 1859, in which paralysis begins in the lower extremities, rapidly extends upward, produces death, and is not characterized by any distinct pathological lesion. It is more common among

men, and follows exposure to cold, acute diseases, and syphilis. It is heralded by formication, numbness, pricking pains in the legs, and a bilateral loss of power in those members. Paralysis soon becomes complete. In one or two days the muscles of the thighs, hips, back, and abdomen are paralyzed; power of rectum and bladder are unimpaired. The paralysis extends upward, finally involves the diaphragm and respiratory muscles, and causes death by asphyxia. Occasionally the cranial nerves are involved before death. Sensation is not lost; muscles do not atrophy; little or no fever; electrical reactions not affected; reflexes are diminished or lost. *Recovery is rare*; death may ensue in twenty-four hours to a month. No satisfactory method of treatment is known, but it is wise to follow the general rules given for acute myelitis.

SPINAL SCLEROSIS.

Definition.—An overgrowth of the interstitial connective tissue of the spinal cord, accompanied by degeneration and atrophy of the nerve-cells; dependent upon inflammation and manifesting itself in many different symptomatic forms, viz.: (1) antero-lateral spinal sclerosis; (2) posterior spinal sclerosis; (3) multiple spinal sclerosis; (4) hereditary ataxia.

Etiology.—Follows acute myelitis or spinal meningitis; direct injury; acute diseases; syphilis; mineral poisons; exposure; alcoholism; venereal excesses. A disease most common among men from thirty to fifty years of age. Is frequently hereditary.

(1) ANTERO-LATERAL SPINAL SCLEROSIS.

Synonyms.—Duchenne's disease; chronic anterior poliomyelitis; chronic diffused atrophic paralysis (Fagge).

Symptoms.—Lower extremities become weak ; patient walks on tiptoe with a waddling gait and a tendency to fall forward. Complete paralysis soon develops, and may spread to the muscles of the back and arms. Muscles are flabby ; waste rapidly ; give reaction of degeneration ; sensation is not lost ; bladder and rectum not affected ; absence of bed-sores ; joints become stiff. Pains in the back and limbs of a tingling or dull character ; headache ; slight fever ; muscular stiffness and occasional cramps, which precede the actual paralysis. It either pursues a chronic course, gradually becoming worse, involving the upper extremities, or gradually improves until partial or complete return of power ensues. *Prognosis* is uncertain ; may last four or five years before fatal termination.

Pathology.—In the anterior cornu, the multipolar gray nerve-cells and axis-cylinders are degenerated, atrophied, and destroyed ; considerable granular matter is present ; proliferated cells and general sclerotic condition of the anterior and lateral columns of the cord. Motor nerve-roots are atrophied. This condition spreads from below upward.

(2) POSTERIOR SPINAL SCLEROSIS.

Synonyms.—Locomotor ataxia ; tabes dorsalis ; locomotor ataxy.

Symptoms.—*Onset* is very slow, and among the first symptoms noted are *sharp, shooting, neuralgic pains*, which occur in the lower extremities at irregular periods. Pain may continue for a few seconds or intermit and remit with more or less severity for several hours. *Reflexes* are diminished and finally abolished. *Sensation* is soon impaired ; cannot distinguish when the feet are set firmly on any object ; sensation is that of walking on velvet or some very elastic substance : a feeling very similar to that produced when the "foot is asleep."

Sensory impressions are delayed several seconds or minutes after the impression has been made.

Ocular symptoms appear in the form of strabismus, diplopia, ptosis, squinting, and the *Argyll-Robertson pupil*—a myotic pupil which responds to accommodative effort, but not to light. Powers of coördination are diminished; gait is uncertain, with a tendency to fall when eyes are closed or feet closely approximated; cannot walk in a straight line; cannot turn around without help and are unable to stop themselves voluntarily. As disease advances, the legs are thrown wildly about when walking and the heels come down on the floor very hard. Electrical reactions are normal; muscles do not atrophy, except from disuse; muscular power is retained and sometimes increased.

Girdle pains; sensory changes—anaesthesia, analgesia, pricking sensations; and increased susceptibility to heat and cold. Bladder is irritable and power soon lost; sexual organs greatly excited at first, but impotence results. *Gastric crises* are sharp pains in the stomach and back, and obstinate vomiting. Crises may occur in any of the viscera.

Trophic Changes.—Brittleness of the bones; changes in joints; falling of the hair and nails; blisters; localized sweating. Among complications and sequelæ are optic neuritis and loss of sight; deafness; paralysis; severe headaches; apoplexy; epilepsy; most obstinate bed-sores; cystitis; pyæmia; and general paralysis of the insane. Absolute recovery is rare; may persist for many years and terminate in death from one of the crises or complications.

Pathology.—Posterior columns of the spinal cord are sclerosed, most marked in the lumbar region. Posterior cornu of gray matter is more or less involved, showing degeneration and atrophy of the nerve-cells and axis-cylinders; meninges over affected part of cord are frequently involved; sensory

nerve-roots are atrophied. In the bones there is an increase of mineral salts, rendering them brittle. Pains are due to involvement of sensory nerve-roots. Impression made on the extremities is carried by the sensory nerves until the diseased parts are reached, when it is either stopped or reaches the nerve-centers through circuitous routes, thus producing delayed sensation. Incoördination is dependent upon impaired sensory action.

(3) MULTIPLE SPINAL SCLEROSIS.

Synonyms.—Disseminated sclerosis; insular sclerosis; cerebro-spinal sclerosis; Charcot's disease.

Symptoms.—*Onset* is usually slow, but may be sudden, with weakness and trembling in the arms or legs, and loss of muscular control. *Tremor* is very characteristic; is absent during rest and sleep, and present only during voluntary efforts. When the arm is moved, it vibrates with a quick, jerking motion from side to side, increasing with the effort. This vibratory movement or tremor is so pronounced that it is impossible for the patient to lift a glass of water without spilling it. Not only are the arms affected, but the head nods to and fro, the body sways from side to side, and the legs are very unsteady. The eyeballs oscillate (*nystagmus*) from side to side whenever an effort is made to concentrate them upon any object. *Speech* is spasmodic, scanning, *staccato* in character, and slow, with distinct articulation of every syllable. *Sensation* is altered; there is numbness, formication, tingling, and, occasionally, complete anæsthesia. Muscles atrophy; electrical reactions are diminished late; headache; diminution of vision; delusions and general paralysis of the insane.

Pathology.—Small isolated and disseminated spots of chronic inflammation and sclerosis are found in the brain.

medulla, and spinal cord. These spots are darker than the surrounding structure, and harder. Sclerosis may extend to the nerve-roots and produce neuritis. Nerve-cells and axis cylinders are degenerated and destroyed in the sclerosed areas; vessel-walls are thickened and in a state of fatty degeneration.

Diagnosis.—See table, page 361.

Prognosis.—Disease may run for twenty years. Death may ensue from sudden apoplectic attacks. Complete paralysis and inability to help themselves may last for years. These patients are very susceptible to acute diseases, which usually prove fatal.

(4) HEREDITARY ATAXIA.

Synonym.—Friedreich's disease.

Description.—A disease transmitted by heredity to one or more members of one family. It is a sclerosis of the lateral and posterior columns of the spinal cord; begins in early life, about puberty. There is a lack of coördination in the legs; movements are uncertain and jerky; patellar and plantar reflexes are diminished early; sensation is not often impaired at first; anaesthesia may develop later; absence of sharp pains; speech is uncertain, hesitating, and interrupted; nystagmus produced by lateral motion of the eyes, but checked when they are fixed on any object. Arms, head, and neck are soon involved. Absence of complete paralysis, optic neuritis, crises, trophic disorders, and mental changes. Disease may continue many years, and death ensue from complications. Recovery is rare; usually get worse.

Treatment.—The treatment of all forms of spinal sclerosis is similar and rather unsatisfactory. Diet, hygiene, and exercise must be regulated according to the needs of each case. Iodides, mercury, double chloride of gold and sodium, zinc

salts, phosphorus, silver salts, arsenic, strychnine, belladonna, ergot, iron, and numerous other remedies are recommended and given in doses which vary with the therapeutical and physiological indications. Counter-irritation over the spine; galvanism and faradism—the former producing best results.

For the *pains of locomotor ataxia*, morphina hypodermically. Cannabis Indica, gr. $\frac{1}{3}$, every three or four hours; phenacetin or acetanilide, gr. x–xv, every three hours. Always watch for retention of urine. *Charcot's method of suspension of the body* by the head and shoulders is supposed to relieve spinal tension and some unfavorable symptoms of locomotor ataxia. It is a dangerous method; must be very cautiously used; must not be practiced longer than twenty seconds to three minutes, varying with each case, and must be followed by absolute rest in the recumbent position. In fact, all forms of treatment resolve themselves into treatment of symptoms and complications.

DISEASES OF THE BRAIN AND MEMBRANES.

ACUTE CEREBRAL MENINGITIS.

Etiology.—Traumatism; exposure to cold; extension from other parts, as from the ear: exposure to the sun; alcoholism; syphilis. Most common in young adults.

Symptoms.—*Prodromal.*—For an uncertain period of time there is uneasiness, headache, nausea or vomiting, feverishness, tinnitus aurium, and giddiness.

First Stage.—*Onset* generally begins with a chill, which is soon followed by high fever, 104° F. Headache, tinnitus aurium, and vertigo increased; conjunctivæ are congested; face is red and hot; persistent nausea and vomiting; pulse is tense and rapid; photophobia; pupils often contracted; constipation. Delirium and convulsions follow. Hyperæsthesia; muscular twitchings and spasms, often amounting to opisthotonos.

Second Stage.—In one to four days delirium and muscular spasms subside and patient becomes comatose; extremities are cold; pupils dilated; pulse feeble and slow; urine and feces passed involuntarily; fever is diminished; paralysis of one or more groups of muscles; death from deep coma or collapse. If recovery ensues, there is severe headache, which persists for many months or years.

Pathology.—An acute inflammation of the cerebral pia mater and arachnoid membranes. A serous effusion, often becoming purulent, is found in the subarachnoid space and

ventricles of the brain. Meningitis may be general; may affect the convexity of the brain or its base (*basilar meningitis*). Owing to pressure of the exudation and inflammatory products, the brain substance is impinged upon, flattened, and, not infrequently, atrophied, destroyed, ecchymotic, or filled with small abscesses.

Prognosis.—Most cases are fatal. Headaches, defects of vision, blindness, deafness, epilepsy, or muscular paralysis may follow cases of recovery.

Treatment.—Put patient in a dark, cool room, and keep as quiet as possible. Cold water, coils, compresses of cracked ice should be applied constantly, and the head slightly elevated above the level of the body. Administer a free drastic or saline cathartic at the onset. Venesection may be necessary to relieve severe congestive symptoms. Aconite or veratrum to reduce active circulation. Large doses of bromides, acetanilide, or phenacetin will give partial relief to headache, but are liable to depress the heart. Ergot is of doubtful utility. Give a diet of milk and farinaceous foods.

When acute stage subsides, give stimulating diet and stimulants as indicated. Small doses of calomel or mercury protiodide. Occasional blisters to the base of the skull may be beneficial. Surgical operations have recently been advocated for removal of large intracranial effusions.

TUBERCULAR MENINGITIS.

Synonyms.—*Acute hydrocephalus*; basilar meningitis.

Etiology.—A disease found most frequently in young male children who inherit or show a predisposition to the tubercular diathesis. It may occur in adults and is brought into activity by acute diseases, hip-joint disease, or diseases of the middle ear.

Symptoms.—Child may be drooping, indifferent, uneasy, fretful, constipated, and generally debilitated for weeks or months before the onset. *Onset* begins with slight *headache*, which soon assumes a severe, constant type, and causes the child to cry out and scream with the pain; nausea and vomiting, followed by convulsions. Slight fever develops; pulse is quick; great sensitiveness to light and sound. Patient lies in bed all the time and does not wish to be disturbed. There is squinting and diplopia.

In a few days vomiting ceases, but headache persists or increases; delirium and drowsiness; head, neck, and back are drawn into a condition of *opisthotonos*; pulse is slow and irregular; high temperature; face flushed; vaso-motor disturbance, shown by a persistent redness of the skin after slight pressure on it; bowels constipated; loss of appetite; optic neuritis.

Drowsiness and all symptoms increase; *Cheyne-Stokes breathing*; hyperpyrexia; local paralysis; unequal pupils; convulsions; profound coma and death. The duration of the disease, from time of onset to its termination, varies from two days to three weeks.

Pathology.—*Pia mater* is the membrane involved, and is covered by an effusion of lymph of a clear, opaque or yellow color over its basilar portion, its prolongation into the fissures, and along the cerebral arteries. The upper portion of the pia mater over the hemispheres is almost entirely free from the exudation. All over the affected area are found *miliary tubercles* of a grayish color, some of which have caseated. The ventricles of the brain are filled with fluid—hence the term *acute hydrocephalus*. Tubercles are sometimes found in the spinal membranes, lungs, and other organs.

Prognosis.—Most cases terminate fatally in two to four weeks. Death may occur in a very few days.

Treatment.—Entirely symptomatic. Treat as acute cerebral meningitis (p. 386).

CEREBRAL PACHYMENINGITIS.

Description.—Inflammation of the dura mater covering the brain may be external (*pachymeningitis externa*), from traumatism, extension from diseased bone, or disease of the middle ear; or internal (*pachymeningitis interna*). Inflammation of the dura mater may be accompanied by hemorrhage—hence the name *hematoma* of the dura mater, or *meningitis interna hemorrhagica*. The latter condition may occur in old people from apoplexy, alcoholism, gout, and syphilis. The dura mater is soft and friable, but in chronic cases it is tough and fibrous.

Symptoms.—Not constant. Headache; photophobia; giddiness; drowsiness, gradually assuming a type of coma; twitchings and convulsions of various muscles; slow, irregular pulse; slight fever. Intellect, memory, and intelligence may be impaired. *Diagnosis* is never certain, and *prognosis* is unfavorable.

Treatment.—Symptomatic and causal.

HYDROCEPHALUS.

Definition.—The presence of large quantities of fluid in the ventricles of the brain, the pia mater, arachnoid spaces, brain substance, or all. Most common in children, and manifests itself by varying nervous phenomena.

Congenital or chronic hydrocephalus occurs as an *external hydrocephalus* when the effusion is in the pia mater, *internal hydrocephalus* when in the ventricles of the brain, and *mixed hydrocephalus* when in both.

Acute or acquired hydrocephalus is dependent upon tubercular meningitis, already described (p. 386).

Etiology.—A disease of young children of tubercular and syphilitic extraction, in whom there is an arrest of cerebral development or intracranial irritation.

Symptoms.—*Congenital Hydrocephalus.*—Gradual enlargement of the head, and emaciation. Appetite is good; general drowsiness and listlessness; dullness of intellect and lack of the general brilliancy of most children. The *head* soon assumes a size entirely out of proportion to the child's body; *face* is small and wrinkled; head becomes too heavy and tends to sag. *Voice* is shrill and pitched in a high key. If case progresses, convulsions soon occur; muscular power becomes deficient; vision and other senses are often impaired or lost; vomiting may complicate, and death ensue from convulsions, coma, or intercurrent diseases. In rare cases the fluid has been known to escape by rupture of the integument. Cases may be arrested in their course, but the general duration of life varies from one to ten years—one case running twenty-one years.

Pathology.—The effusion, which is similar to the cerebro-spinal fluid, varies in amount from a few ounces to a quart; is found in the ventricles of the brain, in the arachnoid spaces, in the substance of the pia mater, and, occasionally, in the brain substance itself. As the effusion accumulates, it presses against the brain and flattens it against the skull; the bones of the skull are forced outward in the lines of least resistance, and in time become as thin as tissue-paper. The veins are prominent all over the head. Inflammatory changes may be present or absent. When the fluid is in the arachnoid spaces and not in the ventricles, pressure on the brain reduces it to a small, compact mass.

Diagnosis.—*Rachitis* presents a skull which is compressed laterally and is quite long; has a high, square forehead; general symptoms of rickets. A hydrocephalic skull is rounded

in all directions; prominent, overhanging forehead; prominent and divergent eyeballs.

Treatment.—Surgical measures meet with most favor. Aspiration of small amounts of the fluid from time to time, followed by adhesive strips or bandages to exert slight pressure. Mercury and the iodides. Nutritious diet of milk, animal-broths, whites of egg, beef preparations, and scraped beef. Observe general rules for treating persons with a tubercular or specific diathesis.

CEREBRAL HYPERÆMIA.

Synonyms.—Congestion of the brain; cerebral congestion.

Definition.—An abnormal increase of the arterial or venous supply of blood to the brain, recognized by headache, giddiness, flushed face, and general nervous manifestations.

Etiology.—*Active or arterial hyperæmia* is caused by excessive action of the heart, as in violent exercise, or by hypertrophy of the left ventricle; injury to the head; apoplexy; plethora; insolation; alcoholism; mental over-activity or excitement; excesses; anger; obstruction to the circulation; prolonged stooping or hanging with the head downward.

Passive or venous hyperæmia is caused by some obstruction to the return venous circulation.

Symptoms.—Begins suddenly or gradually with a feeling of fullness and throbbing in the head, accompanied by dizziness; ringing in the ears; "bleary vision"; flashes of light in the eyes; great mental excitement; inability to concentrate thoughts; irritability; slight delirium; dyspnoea; and a throbbing or neuralgic headache. Carotids pulsate freely; face is red and flushed; conjunctivæ are congested. In old persons these phenomena are often replaced by apoplectic symptoms.

Attacks may be transitory in character; may last one minute to several days, and often recur.

Diagnosis.—*Apoplexy*.—Consciousness is lost entirely; paralysis is unilateral; symptoms prolonged; motion and sensation involved at the same time in same part.

Embolism.—Sudden onset; prolonged or permanent paralysis; history of heart or arterial diseases.

Treatment.—If due to an over-loaded stomach, administer an emetic. Give full doses of aconite or veratrum to control over-active circulation. Place patient in recumbent position, with head elevated; apply cold to head, and put feet in hot mustard-water. Venesection may be indicated in plethoric persons and those predisposed to atheroma. A hypodermic injection of morphina and atropina allays excitability. Give saline cathartics and calomel. Limit amount of liquids taken, and do not administer them hot. Let diet be a light, farinaceous one. Treat symptoms and complications as they arise.

Passive hyperæmia is treated on the same general principles, taking care to give remedies for heart-troubles and to relieve local obstructions.

CONCUSSION OF THE BRAIN.

Description.—Concussion or violent shaking of the brain is caused by a direct blow upon the head; or, indirectly, by a shock produced by falling from a height, but alighting on the feet. Symptoms will depend upon the shock produced. It may amount to a mere stunning or blunting of intellect for a few moments, together with slight nausea, yawning, and uneasiness. In severe cases, sensibility is lost; pupils are contracted; face is pale and cold; pulse rapid, thready, and compressible; nausea; shallow respiration; diarrhœa; retention or involuntary passage of urine; can be roused from the stupor

only with difficulty. This stage may last for several hours, when they either die or show signs of reaction and restoration of functions. Inflammation of the meninges or brain may follow.

Diagnosis.—*Compression* of the brain has complete insensibility; pallor; stertorous respiration; dilated pupils and fixed eyes; pulse is full and slow; bowels inactive; local paralysis.

Treatment.—Remove all tight clothing; rub the body and extremities freely to restore circulation. Administer diffusible stimulants by the mouth, if they can swallow; but if not, give strychnina or ammonia hypodermically. Small inhalations of ammonia often encourage restoration; apply warmth to the feet and body. Cold should be applied to the head. When reaction is established, opium and sedatives may be indicated to avert inflammation. Patient should be cautioned to remain in bed for several days or longer, until convalescence is fully established, as inflammatory symptoms are prone to follow for some time after reaction.

CEREBRITIS.

Description.—Inflammation of the structure of the brain may be acute or chronic, local or general.

Acute cerebritis is caused by direct injury, embolism, septicaemia, pyaemia, or extension from other parts. That portion of the brain involved is soft and friable; quite red in color from increased vascularity and hemorrhage, and is called *red softening* of the brain. The nerve-cells are degenerated. It begins with headache, vomiting, and slight fever. Convulsions and delirium soon follow. It may begin suddenly like an apoplectic attack. Paralysis is limited and involves certain groups of muscles. Aphasia may occur. Mind is never perfectly sound, and death follows.

Chronic cerebritis is dependent on syphilis, embolism, cerebral hemorrhage, prolonged mental work, insanity, and extension from other parts. The affected area of the brain is soft, and creamy white or yellow in color, termed *yellow softening* of the brain. It manifests itself by a gradual failure of intellect; dizziness; hyperæsthesia or anæsthesia; general debility; headache; local paralysis; senses may be diminished or lost. In one to three years, patient dies of debility or intercurrent affections.

Treatment.—Little can be done in acute or chronic cerebritis except to treat symptoms, and upon the general plan of tonics and alteratives. Endeavor to nourish patients as much as possible. Stimulate as necessary.

CEREBRAL HEMORRHAGE.

Etiology.—Cerebral hemorrhage is most common in men who have passed forty. *Secondary* to atheroma, miliary cerebral aneurysms, syphilis, gout, plethora, tuberculosis, various diatheses, Bright's disease of the kidneys. In many cases it is hereditary.

Exciting causes are over-exertion, mental and physical; intemperance in diet and drink; sudden or prolonged stooping; may occur during rest or sleep, without any apparent exciting cause.

Symptoms.—*Apoplectic.*—*Apoplexy* may begin suddenly or be preceded for a few hours or days by slight headache, uneasiness, giddiness, and numbness of the extremities. *Onset* is sudden, with rapid loss of consciousness; patient falls suddenly after some exertion or during rest. It may begin with very severe headache, faintness, impaired speech, paralysis, convulsions, followed by a gradual loss of consciousness until they become comatose and cannot be roused.

Face is red and congested; breathing is stertorous; absence of superficial reflexes; pupils may be contracted, dilated, or uneven; subnormal temperature; rapid pulse; profuse sweating in some cases; gradual cyanosis and death. On the other hand, they may remain comatose for several hours or days, and gradually regain consciousness.

Hemiplegic.—When consciousness returns, temperature rises to 102° or 104° F., and one or more groups of muscles on the same side of the body are paralyzed, usually the muscles of an arm, leg, or both. Tongue is often protruded to one side, or corner of the mouth is drawn. These paralyzes may recover entirely in a few weeks or months; may recover partially; or may be permanent. Muscles sometimes become rigid and cause permanent flexion of the fingers; are slightly atrophied, but retain their normal electrical reactions.

Aphasic.—*Aphasia* is a complete or partial loss of power of speaking or understanding spoken or written language, caused by some central nerve-lesion. Aphasic symptoms vary in character. The mind may be as blank as that of a baby; they may be able to utter sounds, but not intelligent and articulate speech (*aphemia*); absolute loss of memory (*amnesic aphasia*). Some use wrong words to express their ideas. They may be able to speak intelligently, but cannot write (*agraphia*) or read.

Pathology.—Arteries of the brain are found in a state of atheromatous degeneration, or their peripheral branches are filled with miliary aneurysms. Hemorrhage varies in amount, from a very slight effusion of blood, which presses on one part of the brain substance, to very profuse ones, which break down the brain and fill the ventricles, sulci, and fissures. Recent cases show a dark-red clot, old cases a dark-yellow clot, of disintegrated blood. When blood first escapes, it forms a

clot which in time contracts, undergoes degeneration, and is partially or entirely absorbed.

Hemiplegic, aphasic, and other symptoms will vary according to the nerve-centers involved, and the seat of hemorrhage can be determined during life by a knowledge of *cerebral localization* of the functions. Hemorrhages are most common in the branches of the middle cerebral artery, in the optic thalamus and corpus striatum. Brain substance is degenerated in the region of the clot. Hemiplegia is always on that side of the body opposite to the part of the brain affected—hemorrhage on the right side of the brain means paralysis on the left side of the body.

Diagnosis.—*Epilepsy*.—Previous history; sudden onset with epileptic cry; frothing at the mouth; grinding the teeth and biting the tongue; no hemiplegia; can be roused from stupor; is a disease of young people; no subnormal temperature; no characteristic breathing.

Alcoholism.—Insensibility not complete; no stertorous breathing; pupils react to light; pulse is rapid; can be roused by stimulants; absence of hemiplegia; detection of alcohol in urine.

Opium Narcosis.—Gradual onset; pupils contracted to pin-points; can be temporarily roused; no hemiplegic symptoms; slow pulse and respiration; history of case; uncertainty of age.

Uremic Coma.—History; preceded or accompanied by convulsions; albuminuria; can often be roused temporarily; no paralysis; no congestive symptoms of face; normal reflexes; no secondary fever.

Prognosis.—Favorable if consciousness and rise of temperature begin within twenty-four hours. Unfavorable as to life in irregular respiration, convulsions, vomiting, and prolonged low temperature. One attack is commonly a forerun-

ner of others which will ultimately result fatally. Recovery is prolonged, tedious, and always followed by one or more sequelæ or complications.

Treatment.—Whenever premonitory symptoms manifest themselves, patient should be put to bed at once; cold applied to the head and heat to the extremities. Free saline or drastic cathartics should be administered until free action is obtained. *Avoid* hot, stimulating drinks. Aconite or veratrum for over-active circulation. Venesection in full-blooded, plethoric persons.

During the attack, cold should be applied to the head; head must be elevated; warmth to the body and extremities. When pulse is full and bounding, venesection may be advisable, or hypodermic administration of veratrum or aconite. If pulse is weak, unsteady, and compressible, give digitalis, ammonia, or strychnina hypodermically. Attend carefully to bladder and prevent retention of urine. When consciousness begins to return and patient can swallow, establish free purgation, if patient is plethoric and not depressed. If weak and anæmic, give tonic medication and avoid purgatives. Do not allow the circulation to become very active nor fever to remain high for any long period.

When all acute symptoms subside, alteratives and absorbents should be administered for weeks or months. Massage and electricity to the affected limbs. Great care must be exercised in habits of physical and mental activity, hygiene, and diet, to prevent recurrence.

CEREBRAL EMBOLISM AND THROMBOSIS.

Definitions.—*Cerebral embolism* is the lodgment of an embolus (a blood-clot carried from some point in the circulation) in one of the cerebral vessels.

Cerebral thrombosis is the gradual formation of a clot or thrombus in one of the cerebral vessels.

Etiology.—*Embolism* is due to the formation of clots in valvular heart-diseases, thrombosis, and endocarditis, which become detached and are carried into the cerebral vessels by the circulation.

Cerebral thrombosis is due to the formation of a clot on the roughened wall of a degenerated or atheromatous cerebral vessel.

Symptoms.—*Cerebral Embolism.*—*Onset* is sudden, with vertigo and severe headache; nausea and vomiting; impairment of speech and hemiplegia. Symptoms often simulate those of cerebral hemorrhage, and begin suddenly with complete loss of consciousness. Death not infrequently occurs, but recovery soon ensues if collateral circulation is established.

Cerebral thrombosis is preceded by headache, slight dizziness, and nausea; formication, numbness, and impaired motility in one half of the body; absent-minded; impairment of speech; general anxiety, lasting from a few hours to several days, when patient is seized with symptoms similar to cerebral hemorrhage. Recovery may ensue, or death from exhaustion, paralysis, septicæmia, or pyæmia—the latter if the thrombus is of septic origin.

Pathology.—When an embolus or thrombus occludes a cerebral vessel there is anæmia and malnutrition of that part of the brain supplied by it, which results in softening of the brain. This means a destruction of a number of centers, with corresponding motor and sensory symptoms in the parts which they control. If collateral circulation is established early, complete recovery may be expected.

Treatment.—Sustain with nourishing diet and stimulants. Avoid depressants and venesection. Treat diseases of heart as indicated. Ammonium carbonate, with iodides and mer-

cury, seems to hasten absorption of clots. Treat as in the second and third stages of cerebral hemorrhage.

CEREBRAL ABSCESS.

Description.—Abscess of the brain is rarely primary, but is secondary to suppuration of the middle ear, scarlatina, necrosis, diseases of the nose and frontal sinuses, syphilis, and pyæmia. Abscesses may be single or multiple, and will vary in position according to cause; are small, or one or two inches in diameter; contain a greenish and, at times, a very offensive pus.

Symptoms.—Vary according to size and location. Pain in the head is dull, throbbing, sharp, or neuralgic, and exacerbates at irregular intervals. Pyæmic symptoms of chills, rigors, fever, and profuse sweating. Vomiting and convulsions; optic neuritis; alterations in mental faculties; loss of flesh; motor and sensory paralyses, varying with the centers affected; aphasia may be expected. Cerebral abscess may run a rapid course in a few weeks or may last for many months. Death is caused by debility, inanition, and paralysis of the various vital centers. Recovery may ensue, but the prognosis is always unfavorable.

Treatment.—Symptomatic, palliative, and surgical. Abscess should be opened freely by trephining as soon as diagnosed, for delays are unusually fatal.

CEREBRAL TUMORS.

Varieties.—*Glioma* is a tumor of neuroglia-cells, occurring in the substance of the brain and spinal cord, belonging to the variety of round-cell sarcoma; is the most common

tumor found in the brain; is never encapsuled, and is very prone to hemorrhage.

Sarcoma grows from the membranes or the bones of the cranium; is either primary or secondary, single or multiple.

Tubercle is either single, as a large tumor in the brain substance or on the meninges; or multiple, as in miliary cerebral tuberculosis.

Gumma form on the membranes, inner surface of the cranial bones, and are caused by syphilis.

Cysts may form from parasites and disintegrating tumors.

Aneurysm may be single or multiple; very small or large.

Etiology.—Syphilis; tuberculosis; parasites; injury; atheroma of the vessels; cancer; heredity. Cerebral tumors are most common in males.

Symptoms.—They vary according to the location, character, and duration of the tumor. Among symptoms common to all cerebral tumors is *headache*, which is constant, and at times very severe; localized, but may be general. *Nausea* and *vomiting* frequently begin early, are constant symptoms, and often prevent retention of nourishment. *Optic neuritis*, single or double, complicates most cases. *Vertigo*, impaired hearing, convulsions, drowsiness, loss of memory, slow pulse, and constipation.

Local conditions of anæsthesia, pricking, numbness, hemiplegia, tonic or clonic muscular spasms, and ataxic symptoms.

Diagnosis.—A positive diagnosis cannot be made directly, but by exclusion.

Prognosis.—Unfavorable, except in syphilitic cases, where moderately favorable results may be expected.

Treatment.—In syphilitics, treat with alteratives and absorbents, as indicated in the tertiary stage of syphilis (see p. 101). Surgical operations promise much in a select line of cases. Treat symptomatically as indicated by each case.

INSOLATION.

Varieties.—(1) *Sun-stroke*; (2) *heat-stroke*.

Description.—(1) *Sun-stroke* is caused by prolonged exposure to the direct rays of the sun or high temperature. It begins suddenly with a dull feeling in the head; headache; dimness of vision; nausea; giddiness; and loss of consciousness. Temperature is abnormally high, and varies from 106° to 112° F., or higher; skin is dry and hot; urine high-colored and scanty; muscles relaxed but not paralyzed; pupils do not respond to light; stertorous respiration; flushed face, and vessels prominent; heart is over-active and strong; muscular tremors or convulsions; occasional remissions of wild delirium. Death may ensue from hyperpyrexia, convulsions, or coma. Recovery is slow, and followed by unpleasant sequelae, such as headaches, vertigo, impairment of intellect, insomnia, general debility, and a general tendency to return on slightest exposure.

(2) *Heat-stroke* is similar to sun-stroke, but never so severe or serious. It begins by dizziness, slight nausea, weakness, paleness of the skin, weak pulse, and rapid respiration. It may become so pronounced that consciousness is lost. Temperature rarely rises above 105° F. In a few hours or days patient is as well as ever.

Pathology.—That of acute cerebral congestion. Lungs, kidneys, liver, and spleen often enlarged. Serous effusions into the ventricles of the brain. Blood is thick, dark, and has altered corpuscles.

Treatment.—*Sun-stroke*.—Never delay one moment, but strip patient at once and bathe him all over with cold water. Put ice to the head, and pour cold water over the body until hyperpyrexia is diminished. Antipyretic drugs are too slow

to be of any service. When hyperpyrexia is reduced, put patient in warm blankets, still continuing cold applications to the head, and administer sufficient morphina to keep quiet and to relieve pain. Let food be light, such as milk, beef-extracts, soups, and boiled rice. Meet all symptoms as they arise. Tonics when necessary. During convalescence, which should be in bed, administer iodides and alteratives. Establish free action of bowels with salines.

Heat-stroke.—Cold to the head; cold sponge-baths, if temperature is above 102° F. Stimulate freely with diffusible stimulants (ammonia, alcohol, or camphor), followed by strychnina in small doses. Meet symptoms; prohibit early return to active mental or physical work.

PSYCHOSES.

INTRODUCTION.

The psychoses are a class of diseases affecting the mind, and are considered under the general term *insanity*.

Mind is that immaterial power behind matter which constitutes the true man and his actions; which embodies the understanding, reasoning faculties, and perceptions, and manifests itself directly through the cells of the central nervous system, and indirectly through the various anatomical mechanisms of the body.

Insanity (*in*, not; *sans*, sound), lunacy, is a loss of power to control one's own free will, with a lack of responsibility for their actions—a pathological condition of the mental faculties dependent upon some perversion of the mind by external or psychological causes. The differentiation between sanity and insanity, between a crank and a lunatic, is so uncertain that it is impossible to define where the one begins or the other ends.

An *illusion* is a modification of perception whereby an object or impression is presented by one of the senses in a false light. A man is mistaken for a demon. Thunder is mistaken for a voice from heaven.

An *hallucination* is a false perception of one of the senses, founded upon imagination only, and not dependent on external impressions. They hear noises and voices; see ghosts, angels, and devils; smell sweet and foul odors—all of which are not recognized by others.

A *delusion* is a peculiar form of mental exaltation in which the patient imagines himself immensely wealthy; a descendant from royalty; about to reform the world; thinks his friends are his enemies, and that they are conspiring to kill or poison him—all of which tends to violence in the end. It is to be observed that illusions and hallucinations depend upon sensory action, while delusions are entirely mental or imaginary.

GENERAL ETIOLOGY.

Mind manifests itself physiologically through a *perfect* organism, and, being immaterial, is never diseased. Let this organism undergo changes, and the manifestations of mind will vary, even though the same mind exists back of the mechanism. This is aptly illustrated by a fine musician who plays excellently on a perfect pipe-organ. Each combination thrown on simply intensifies the melody, but a faulty one is accidentally set and produces an ignominious failure. The instrument is at fault and not the musician. Mind acts physiologically through certain groups of central nerve-cells, but renders itself absurd or violent when attempting to use others. The gradation of intelligence is dependent upon the high or low development and arrangement of central nerve-cells in various individuals, whereas the same power of mind is behind each. The etiology of insanity is shrouded in mystery in many cases, but a combination of circumstances exists which favors its development.

Predisposing Causes.—Heredity is the great predisposing cause, and is most frequently transmitted from the mother to her daughters. Children of extremely nervous parents often develop insanity. Educated and well-trained persons are least susceptible. The changes of puberty and old age may excite it. Extreme work, required of a weak mind to

keep pace with the demands of the day, is often pernicious. Dark, gloomy, damp, and foggy days predispose to mental disorders, while bright, fresh, and invigorating sunshine always cheers.

Exciting Causes.—Direct injury to the head; acute or chronic diseases; epilepsy; influenza; sexual disorders and masturbation; intemperance; indigestion; constipation; womb-diseases; child-birth; prolonged irritation of the mind or temper by study, jealousy, hatred, love, reverses, or great successes.

CLASSIFICATION.

Maudsley classifies insanity into *affective* and *ideational insanity*.

Affective, emotional, or pathetic insanity is manifested by abnormal actions.

Ideational or intellectual insanity is shown by the improper use of words, sentences, rhetorical absurdities, irrational conversation and reasoning.

Insanity may be affective, ideational, or both. Ideational insanity is usually preceded by the affective form, the latter being the last to disappear during convalescence. We judge a person's sanity from his conversation or acts. Affective insanity is much more dangerous than the ideational, for in the former the first indication shown may be a violent act, while in the latter there is incoherent, absurd, or threatening talk, which soon leads to direct treatment or control. The diagnosis of affective or emotional insanity is often difficult. Professor J. K. Bauduy says: "*Emotional insanity* is therefore known to exist by the history of the case, the existence of hereditary predisposition, the presence of some well-known conditions of causation, the change of character, the cessation of social harmony with surroundings, the corroborative cir-

circumstances, the impaired judgment of relations, the measuring of the perversion according to an individual standard or to one accepted by the common sense or the general consent of mankind, the motiveless assaults upon relatives and intimate friends, the existence of some of the physical symptoms of insanity; in other words, our diagnosis is to be based upon all the above-mentioned states, the etiological conditions, the sequence of symptoms, and the general course of the affection."

Affective insanity manifests itself in a *moral* form, in which the whole character of the patient changes from religious to profane moods; from miserly to liberal actions. It also assumes an *impulsive* form, where there is a constant menacing or irresistible desire to commit atrocious crimes or acts, independent of any mental perversion and beyond control of the will.

The legal responsibility of an insane person rests entirely upon the proof of the presence or absence of will-power. To inflict corporal punishment or the death penalty for a truly insane act is not legal, but such patients must be confined strictly in an asylum for life, if the offense be capital.

MANIA.

Definition.—Mania is a psycho-neurosis, recognized by a varying degree of mental excitement, irrational conversation, a pathological association of ideas, unnatural, excitable, wild movements and actions. It is divided into (1) acute delirious mania; (2) acute mania; (3) chronic mania.

(1) ACUTE DELIRIOUS MANIA.

Synonyms.—Delirium gravé: typhomania.

Etiology.—Most common in women from twenty to thirty years of age. Often follows great mental shock from a death, disappointment in love, financial failures, parturition, insola-

tion, or alcoholic excesses. It may develop in cases of tuberculosis or any of the acute diseases. It sometimes occurs periodically. Epileptics are liable to develop it.

Symptoms.—*Onset* is usually very sudden and violent, when patient may sing, cry, laugh, scream from fear, or attack those around her. Her delusions are not constant, and are thus characteristic. Insomnia is an early symptom; sexual desire is increased, and the appetite voracious. Temperature varies from one to six degrees above normal, and the condition may lapse into a typhoid condition called *typhomania*. Rapid pulse; tongue dry and coated; profuse fetid perspiration; great asthenia and prostration. Vaso-motor changes are common. It rapidly progresses to a fatal termination by coma, collapse, or exhaustion in a few days or weeks, or gradually subsides, leaving impairment of some of the mental faculties or chronic mania.

Pathology.—Brain and membranes are greatly congested and œdematous. The ganglia are opaque and granular, and the spaces filled with blood-elements. The vessels of the pia mater are often surrounded by leucocytes.

Diagnosis.—*Acute meningitis* is preceded by headache, drowsiness, tingling and numbness of the extremities, and followed by rapid pulse, high temperature, and optical illusions; pupils often contracted, and stomach irritable.

Delirium tremens manifests itself by anxious expression, alarm, good-nature, restlessness, moist skin, soft pulse, moist tongue, and history. A few days will serve to differentiate.

Prognosis.—Typhoid symptoms, depression of feeling, and rapid pulse are unfavorable. Death may be very sudden. Mortality is high. Cheerful and gay delirium and sleep are favorable signs.

Treatment.—Removal to an asylum is not absolutely necessary, nor is it desirable if proper attention can be given at home. The patient should be placed in a dark room where

everything has been removed which might be used in self-injury, and should be under the constant care of a good, strong, attentive, commanding nurse. Relatives and visitors must be excluded except in special cases. The patient's condition must not be discussed nor mentioned in his hearing. The most nutritious, albuminous food must be given at regular intervals of three or four hours. They require considerable water, and it must not be withheld. Stimulants should not be given as a routine practice, but only when indicated.

Insomnia must be met with chloral, one-half to one dram at a dose. Sulphonal, gr. x-xx, in hot tea is also recommended, but should never be continued, as it is too depressing, and the habit of using it may be acquired. Sleep is usually followed by an absence of delirium, but the delusions still remain. Opium is followed by aggravation of symptoms. Delirium and high temperature are best reduced by a cold bath under the usual precautions. Warm baths are sometimes followed by sleep. Meet all untoward symptoms and complications as they arise.

(2) ACUTE MANIA.

Synonyms.—Raving madness; raving insanity.

Etiology.—May follow simple mania or melancholia. It is not a disease of young adults, but often present after the fortieth year in nervous temperaments. Hereditary.

Symptoms.—*Premonitory*, when present, are delusions of a mild type; change of character, disposition, and habits; headache, restlessness, and mind not perfectly clear; a feeling of impending calamity; a great desire to do something wrong or violent; insomnia or disturbed sleep; and a peculiar piercing luster to the eye. It may begin suddenly, without premonitory signs, with great mental excitement, violent raving, shouting, singing, laughing or crying, which continues for hours or days without intermission. Personal injury, self-abuse,

entire change of manner, or violence to surroundings. Conversation is rambling and disconnected. Delusions are not fixed. Actions are more or less spasmodic and violent. Great self-exaltation and esteem. Insomnia; constipation. Temperature is rarely above 99° to 100° F. Delirium is entirely absent. Thought is almost immediately followed by action. The disease may rapidly progress to dementia, chronic insanity, or melancholia.

Pathology.—General irritation of the brain from hyperæmia. Cerebral anæmia may be present in some cases. The pathological conditions of the various brain-centers cannot be accurately demonstrated, but they are undoubtedly involved, thus producing the great stimulation of thought and action, accompanied by a lack of inhibition.

Prognosis.—The presence of fixed delusions or previous debilitating disease is bad. Recovery may be very sudden, in a few days, weeks, or months. It may progress to dementia or chronic insanity. Relapses are very common.

Treatment.—Send to an asylum at once where moral treatment is strictly enforced and a system of rewards and punishments adhered to according to merit. When there is cerebral congestion, the bromides should be administered in full doses; in anæmic conditions they should be avoided. Applications of cold to the head and spine as indicated. Insomnia must be combated with chloral, gr. x–xl, sulphonal, gr. x–xx, or hyoseyamina sulph., gr. $\frac{1}{5}$ o, hypodermically. Conium is suggested when there is great motor excitement. The most nutritious food must be administered regularly, even though the stomach-tube is necessary.

(3) CHRONIC MANIA.

Description.—The exact stage at which acute mania becomes chronic is not definitely determined, but writers claim

that when it is from three to twelve months' duration it may be called chronic. It manifests itself very much like the acute form, with these differences: the raving is not so constant, but intermits, with periods of comparative or complete quiescence. The delusions assume a less rambling form and tend to become fixed. There may be a period of complete rationality, or the loss of will and volition is fixed.

Monomania is a form of chronic insanity characterized by delusions upon one or more constant points, with an apparently rational mind upon all other subjects. Such is not the case, for a partial insanity is an impossibility, even though the patient may seem sound on other points. There is an unusual degree of self-esteem and personal exaltation which greatly excites the patient if he is antagonized in this respect. He imagines himself wealthy, very strong, a saint, an apostle, or he may think that certain persons are conspiring against his life by poisoning his food or lying in wait for him. Illusions sometimes exist. Hallucinations may develop, when they see a certain spirit, hear imaginary voices, or converse with departed spirits. Monomania is usually the result of acute insanity.

Paranoia is a primary monomania, produced without definite cause, in which the power and strength of the mind are not lost at first, but which tends to assume the distinct form of monomania. It is usually hereditary. Such patients are termed *cranks*. Paranoia receives the name of *protopathic insanity*, *insane diathesis*, or unsoundness of mind.

Chronic insanity may exist for years without affecting the duration of life. Recovery is usually hopeless. Monomaniacs in their earliest stages may be cured, but if the delusions are fixed for six or eight months it is doubtful. Paranoia may recover, but tends to fixed delusions and dementia.

Treatment.—Asylum treatment is indicated, and a strict

moral influence exerted. Violence must be avoided. Control insomnia and complications as indicated.

ACUTE DEMENTIA.

Description.—Acute dementia is a sudden or gradual loss of reason or mind, occurring almost exclusively in persons under forty years of age. Among prominent causes are great mental excitement, shocks from fright, grief, or accident; mental exhaustion from prolonged work; exposure to intense cold or heat; sexual excesses; recovery from asphyxiation; neurotic predisposition; syphilis; and acute diseases—typhoid fever.

Patient suddenly or gradually assumes a blank, idiotic, or ignorant expression. Voice is low and muttering, and every bodily movement is slow and indolent. Pulse is very weak; respiration shallow and slow; movements automatic; anaesthesia of the skin; mouth is open and saliva dribbles; skin is cold; pupils sluggish or inactive; and personal uncleanness. The *characteristic symptom* is the complete loss of knowledge. Professional men know no more than a baby, and cannot do the simplest sums nor answer intelligently. Little attention is given to personal address, and the ideas cannot be collected. Cataleptic states may develop.

Recovery is rare in extreme cases, or when complicating phthisis or pneumonia. The general tendency is to gradual recovery, complete or partial, with the affected period of life a perfect blank.

Treatment.—These patients are best treated at home if proper care can be given. They require as much attention as a young child. Albuminous food must be administered at intervals of four to six hours, even though the stomach-tube is necessary. Quinine, strychnine, iron, arsenic, and manga-

nese are of service as indicated. Systematic exercise and massage. Galvanism of the head has been used to advantage. Apply warmth as necessary, and always wear wool or flannel next the skin.

CHRONIC DEMENTIA.

Description.—Chronic, terminal, or secondary dementia is a loss of mental power as a result of acute insanity or melancholia—the ultimate result to which all forms of mental affections tend. Chronic imbecility. Very old people may lapse into a similar condition from age alone. The general appearance is characteristic. There is a vacant stare and blank expression on the face; looks much older than he really is; gait is uncertain, and bodily strength rather feeble. He may have a mania for walking, running, standing still, crouching in a corner, dancing, or hopping. The finer emotions are not capable of impression. Disposition is usually happy, but may be gloomy, morose, depressed, mischievous, or revengeful. Delusions, hallucinations, and illusions are fixed. They will nurse a bottle, stick, or any object for a baby, and engage in all such similar practices. Personal habits are often filthy, and morals depraved.

The impairment of mind varies. It may be a perfect blank concerning the past and present events; the past may be clear and the present impaired. The nearest friends and relatives may not be known, and after conversing with any one the fact is forgotten at once. He may live over past years and imagine himself young again.

General health is good, but they are subject to plithisis and intercurrent diseases. Constant care is necessary to prevent personal neglect. The prognosis is very unfavorable, and recovery is the exception. Confinement in an asylum is not

necessary, unless there be a tendency to violence or revenge. Make them exercise daily; give frequent baths; do not allow them to lie long in bed, as obstinate bed-sores will form.

MELANCHOLIA.

Description.—Melancholia is a form of affective insanity, manifested by extreme depression of spirits, despondency, great feeling of dejection and sorrow, which is beyond control of the will, and often referred to some imaginary cause. Some patients will sit or stand for hours in the same position, apparently oblivious of their surroundings, with an agonized expression on their face. Others are very restless and pass a great part of the time in crying, moaning, walking to and fro in their room, wringing their hands, and constantly censuring themselves for some imaginary wrong or sin. At first there may be lucid intervals, but the patient is liable to lapse into permanent delusions. They have committed the unpardonable sin or murder, or have some bad disease, pains, parasites, and animals in the intestinal tract. Insomnia and an anaesthetic condition of the skin. Most common after the fortieth year, but may occur at any age. Melancholia accompanied by delusions is termed *lypmania*. When there is extreme fear and terror without referable cause, it is termed *pantophobia*. The general condition of melancholia seems to depend upon anæmia of the brain.

Hypochondriacal melancholia is manifested by a constant study, investigation, and brooding over supposed bodily defects or diseases, which in time leads to more or less disease, fixed delusions, and uncontrollable actions. Maudsley relates a case where a patient penetrated his intestines with a piece of glass, "to let out the gas." These patients constantly talk,

study, and consult about their supposed ailments. If you can divert their mind for a time, all imaginary disease disappears temporarily.

Furor melancholicus, or melancholy with excitement, is sometimes mistaken for mania. There are delusions, great depression, deep mental anxiety, and tendency to suicide or homicide. Such patients, when asked their reason for homicide, will say that it was not for spite, but on account of an irresistible desire to kill a certain person. They conceal knives, pins, needles, or glass for accomplishing their murderous desires. The paroxysms are often periodical, and the patient requires a constant watch.

Melancholia attonita, or melancholia with stupor, is characterized by what might be termed "vegetable life." They refuse all food for fear it is poisoned; will remain for hours or days in the same position, with little or no movement; the face is without expression; they are unconscious to surroundings. One delusion or idea is liable to concentrate the mind for days. Periods of comparative repose and rational existence may occur. It is analogous to catalepsy.

Circular insanity (folie circulaire) is a condition of alteration between the manifestations of mania and melancholia. The patient may be melancholic for a season, become maniacal for a short time, and thus alternate indefinitely. This form is very grave and often terminates in dementia.

Treatment.—Asylum treatment, based upon moral principles, is best, for a more speedy recovery is possible. They may be kept under the strictest eye and placed in such positions that they can do themselves or others no physical harm. When depressed they should be encouraged; when excited, calm and soothe them, even though physical force is necessary. Deal with them as you would with children, and give proper rewards and punishments. Milk, beef-juice, and nitrogenous

foods must be given regularly, by the stomach-tube if necessary. Attend to constipated conditions at once, and keep the bowels regular with cascara, aloin, strychnina, and belladonna. Headache is relieved by acetanilide or phenacetin combined with strychnine or caffeine. Insomnia must be controlled with chloral, sulphonal, or paraldehyde. Alcoholics are sometimes beneficial.

MORAL INSANITY.

Description.—Bandy says: “It is never moral depravity, and moral depravity is not always moral insanity.” If a steady, conscientious, religious, moral man were to suddenly change into a life of lust, lasciviousness, murder, association with bad company, profanity, and open self-pollution without cause, and such a man had come from a highly neurotic or insane family, he would be called morally insane. A close investigation into the previous history will usually show certain inexplicable peculiarities or change of character. Fagge says: “When once we have given up the arbitrary notion that the presence or absence of delusions determines whether the intellectual faculties are or are not impaired, there seems to me to be no basis whatever for the doctrine that ‘moral insanity’ is to be regarded as a separate form of mental disorder.”

IDIOCY.

Definition.—Idiocy is a congenital form of insanity due to an arrest of cerebral development during gestation or soon after birth, and is to be distinguished from *imbecility*, which may occur at any time after birth as a result of some pathological condition, injury, or disease.

Symptoms.—They vary in degree with each case. The worst cases are absolutely helpless; cannot talk or utter a sound; take no interest in surroundings; are oblivious of time; and will never manifest a desire for food. Some can utter slight sounds or monosyllables, and move the face or extremities. When we pass to a higher form where there is recognition, action, and motion, the case is probably one of imbecility. That these patients are really impressed with points about which they seem to be oblivious is shown by the supervention of acute diseases which may cause them to speak about these very subjects. The senses, with the exception of sight, are greatly blunted or dormant. Sexual function and development are poor, and often entirely suppressed. There is liability to dwarfing and imperfect body development.

Pathology.—Inflammation, and the excessive use of lime salts in young children, may be classed as causes. It develops mostly in children of the nervous or insane temperament. The head is microcephalic, imperfectly developed, and the sutures close early. The brain is small and may weigh from fourteen to twenty ounces. Its surface presents comparatively few convolutions and shallow sulci. The hemispheres are poorly developed, and one may be larger than the other. The ventricles are sometimes filled with fluid, and the brain substance is very thin. Sclerosis of the brain is present in some cases.

Prognosis.—Very grave. Most cases are hopelessly idiotic. A change may be produced by great care and nursing.

Treatment.—When proper care cannot be given at home, they should be placed in an asylum. Linear craniectomy has been done by home operators, with a view of increasing the intracranial cavity and giving the brain room to expand and develop. These cases have been reported as improved, but time must elapse before the method can be proved and adopted.

CRETINISM.

Description.—*Endemic cretinism* is a peculiar form of idiocy, characterized by marked deformity of the cranium, face, and body. The mind is the same as found in idiocy. Cretins are rarely more than four or five, and may be only three feet tall. Fagge says: "They have large heads, especially in the direction from ear to ear. The features are broad and thick; the eyes are wide apart; the nose is very flat at the root, and spreads out enormously toward the alæ; the mouth is very large, widely open, with thick lips, and allows the saliva to escape. The forehead and cheeks are wrinkled, and the skin is coarse and rough, so that they have always the appearance of old age. A cretin thirty years old is exactly like a cretin of forty. The hair comes low on the forehead and is coarse and bristly. Cretins have narrow chests, large bellies, crooked limbs. Their hands are broad but short, with short fingers." Goiter is almost always present in districts where cretinism is present, and may exist in many cases. Some of the typical cases show no goiter. Virchow believes that the resulting deformity in the head is due to an early osseous union of the occipital and sphenoid bones at the base of the skull, thus preventing enlargement of the base antero-posteriorly.

Sporadic cretinism occurs in any part of a country, and is also closely related to goiter. In most cases the thyroid gland is very small or absent, but in its place are found two swellings or soft lumps outside the sterno-mastoid muscle and above the clavicle, which are made up of fatty tissue and are pink in hue. They vary from the size of a hazel-nut to a good-sized duck-egg. The same mental condition exists as in the other forms, but they are usually quiet and easily controlled.

Cretinoid Condition.—Sir William Gull cited a case similar to cretinism occurring in an adult woman. The eyes became wide apart; nose flat, broad, sunken, and thick; lips thick; adipose tissue under the chin and eyes increased; large tongue; unwieldy hands; and marked change of disposition.

Treatment.—Entirely symptomatic, and cures have not been reported.

DEMENTIA PARALYTICA.

Synonyms.—General paralysis of the insane; progressive paralysis of the insane; and, improperly, “general paralysis.”

Definition.—A disease of middle life, characterized by a great mental change, dementia, general tremor, unequal, sluggish, pin-point pupils, and progressive paralysis, which tends to fatality.

Etiology.—Most common in blonde men between the ages of thirty-five and fifty years. More common in towns and cities. General insanity. Sexual excesses; great nervous shock from business failures; or injury to the head. Syphilis is said to cause a large number of cases. May be hereditary.

Symptoms.—The earliest symptoms noticed are referable to character. He is absent-minded; forgets readily; becomes careless in habits and dress; spends his money with great freedom; has spells of dullness and moodiness; forgets his meals and appointments; has insomnia and poor appetite. The pupils may be unequal or greatly contracted, and do not respond to light readily. In a few days or weeks chronic delusions develop, and he imagines himself a king, banker, reformer, a millionaire, or he may think that his friends are conspiring against his life.

Accompanying this condition is a peculiarity of articulation. He mixes long words; does not enunciate distinctly; hesitates,

stops, or substitutes the wrong word in a sentence. The tongue and lips tremble when he is told to hold them still. There is a slight tremor of the hand. The gait is unsteady and stiff, and he falls readily. Sometimes the walk is like an ataxic. High reflexes; the pupils remain unequal or contracted. Transitory paralysis is common and lasts for a few hours or days. Attacks of raving and violent insanity.

Improvement may follow and the patient seem cured, but relapse is the rule. Some progress rapidly to complete paralysis and dementia, with a fatal termination in one to five years from the onset. Death is the result of personal violence, bronchitis, or pneumonia. Complete recovery never occurs.

Pathology.—There does not seem to be any definite pathological process demonstrable. Autopsy has shown a thickening of the pia mater, with adhesions to the convolutions of the brain in some cases, and in others the pia mater is separated from the brain by fluid. The arachnoid is often thickened; pachymeningitis and hematoma of the dura mater have been demonstrated. Weight of brain is diminished. Authors differ as to whether the condition is one of “a diffused interstitial cortical encephalitis” or “a diffused parenchymatous cortical encephalitis.” The spinal cord presents changes not unlike the different forms of sclerosis. The nerves undergo changes, and the axis-cylinders are exposed, atrophied, or obliterated. General atheroma.

Diagnosis.—Impaired speech, motionless, contracted pupils, increased reflexes, mental impairment, tremors, and paralysis will serve to diagnose it in the early stages.

Prognosis.—Temporary improvement is frequent, but a permanent cure is impossible. Every true case is necessarily fatal in three to five years.

Treatment.—Very unsatisfactory, and must be symptomatic. Chloral and bromides for insomnia and convulsions.

Keep bowels active. Confine in an asylum if violent dementia appears. Tonics as indicated. Shaw and Tuke each opened the cranium to diminish intracranial tension and thus bring about a reaction, but with temporary success. In syphilitic cases use iodides and mercury in full doses.

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